New Zealand Journal of Agriculture

IMPERIAL MYCOLOGICAL
24 APR 1945

VOL. 70, No. 2. WELLINGTON, FEBRUARY 15, 1945.

PUBLISHED BY DIRECTION OF THE MINISTER OF AGRICULTURE.

Every Good Feature — in HEADER HARVESTERS IS BUILT INTO THE MASSEY-HARRIS No. 15

Ask for a six or eight foot cut Header with large capacity, reliability, versatility, accessibility, simplicity and low maintenance cost and the answer is the No. 15 Massey-Harris.

Study the specifications and you will agree, or better still, ask the man who owns one and get the proof.

SPECIAL FEATURES

- Sturdy Tripod Frame Construction.
- Quick, detachable table, giving nine feet transporting width.
- Large diameter rub-bar Cylinder for clean and fast threshing.
- Open Concave with check bars. Threshed grain goes straight through on to grain pan, thus reducing load on straw walkers.
- Four large steel straw walkers stepped and mounted on double cranks give plenty of pitch and toss to separate the last grain from the straw.
- Air volume control especially adapted for small seeds threshing.
- Quick cylinder speed changes for various crops. Shaker shoe sieves have 2340 square inches cleaning area and this combined with a long and large diameter screen produce the desired result with a clean sample of grain. 53 Anti-friction dust-free bearings provide a smooth and free running combine.
- Safety slip clutches on all main drives.

A SMALL COMBINE IN PRICE.

★ ★ ★

A "BIG" COMBINE IN CAPACITY and STRENGTH.

★ ★ ★

STOCKS AVAILABLE IN ENGINE-FUNCTIONED and POWER TAKE-OFF MODELS.

★ ★ ★

MASSEY-HARRIS
CO. LTD.

Head Office: CHRISTCHURCH.
Branches at AUCKLAND, PALMERSTON NORTH, DUNEDIN. Agencies Everywhere

In Association with
P. & D. DUNCAN LTD.

WRITE TO US FOR DETAILS!

Vol. 70, No. 2. Published by Direction of Hon. B. Roberts, Minister of Agriculture. February 15, 1945.

Farm Production Plan for 1945

IN my New Year message to farmers I stressed the need for a continuance of our effort to increase production and laid stress on the necessity for bringing our wheat area up to 300,000 acres and at the same time seeing that the production of other cereals and food crops is maintained at a sufficiently high level to meet our needs. I place the Dominion targets for cereal grains as follows:

Wheat	300,000	acres
Oats (for threshing)	60,000	"
Barley (malting)	38,000	"
" (feed)	40,000	"
Maize	12,000	"
Total	450,000	"

In the 1942-43 season, under the most difficult conditions as far as labour was concerned, we grew 287,000 acres of wheat, and the total acreage of the crops enumerated above amounted to 380,000 acres, so that the additional arable area for the crops now required amounts to 70,000 acres. More grassland will have to be broken up to accomplish this programme, and the work must not be left entirely to the South Island arable farmer. North Island farmers must assist or the Dominion will go short of cereals required for stock feeding.

The North Island farmer is asked to increase his wheat acreage in wheat-growing districts and to see that our targets for maize and feed barley are attained. I look on maize and feed barley as more or less interchangeable; the more maize we grow, the less barley will we need to provide. All farmers in areas suitable for maize production should make a special effort to grow the crop and thus ensure that we will have sufficient grain for stock feeding.

It is somewhat early in the year to know just what calls are likely to be made on the Dominion for food crops, but I anticipate that our requirements will be not less than last year and any modifications required will be notified in good time. At present I place the Dominion targets for the main crops other than cereals and root and fodder crops for stock feeding as follows:—

Potatoes	37,500	acres
Onions	2,000	"
Peas	35,000	"
Linen flax	20,000	"

A continuance of our present high level of production of grass and clover seeds is still required, and to fulfil our targets for dairy produce and meat it is essential that root, green fodder, chaff, hay and ensilage crops be increased to meet the demands of an increasing dairy cow and ewe population.

Before the start of the 1944-45 season dairy farmers were advised that increased quantities of dairy produce were required and that butterfat production should reach 180,000 tons in 1944-45, 190,000 tons in 1945-46, and 200,000 tons in 1946-47. Stress was laid on the necessity for increasing dairy cow numbers, 30,000 to 50,000 additional cows being required for 1944-45 and 100,000 for each of the next two seasons. This task is well within the dairy industry's capacity. Additional fertilisers have been allowed this season on the basis of 1 cwt. per cow, and provided adequate supplies of hay and ensilage are saved this summer for winter feeding, the production of 190,000 tons of butterfat in 1945-46 should be reached.

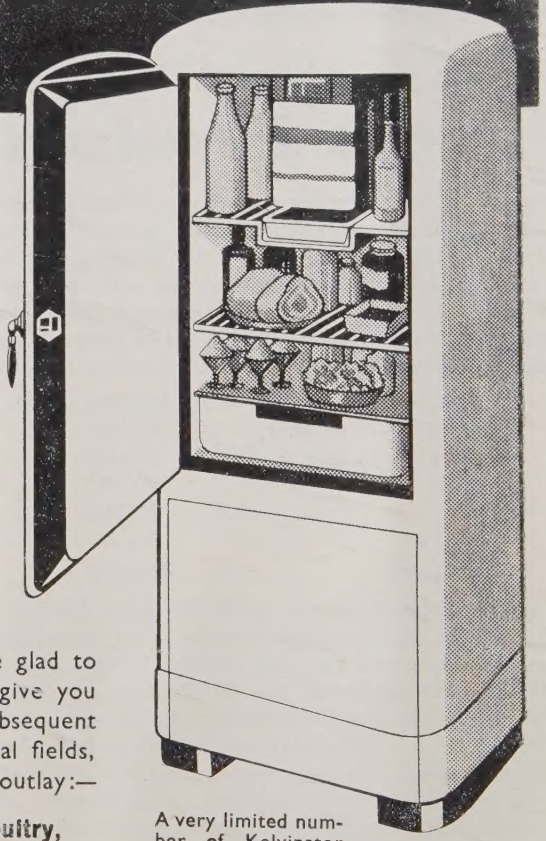
Our total meat production, including pig meats, should be maintained at not less than 480,000 tons, and every effort should be made to increase our pig meat production to 50,000 tons in 1945-46. To accomplish this it will be necessary for dairy farmers to produce crops for pig feeding. Many farmers already carry out this practice, and I have read with interest the experiences of some of these farmers which have appeared in recent issues of the "Journal." An extension of this practice is essential if our objective in pig meat production is to be reached.

To accomplish our programme we must plough more land and grow more cereals and fodder crops. The targets set are within our reach, and I am sure the farmers of the Dominion will accomplish the task which has been set them.

B. ROBERTS, *Minister of Agriculture.*

Solve your COOL STORAGE PROBLEM with Kelvinator

COMMERCIAL REFRIGERATION



First come—first served. If **you** have a refrigeration need, we can give you priority delivery of a specialised Kelvinator installation to exactly suit your specific job—PROVIDED YOU ORDER EARLY!

A limited number of industrial Kelvinators are again available as war work permits and you can't make a sounder choice for a life-time of economical, trouble-free refrigeration. 29 years background as pioneer in the Industry, over every phase of cool-storage problem, is your guarantee of the latest scientific equipment and built-in thrift, no matter what type of Kelvinator installation you require for your industry, home or retail business.

Discuss your specific need with your Local Dealer. He'll be glad to advise and recommend the Kelvinator installation that will give you hygienic protection and improved output at low first and subsequent operating cost. In the following, and many other commercial fields, Kelvinator is definitely **most value** for your refrigeration outlay:—

Farms
Butter Factories
Cheese Factories
Milk Cooling
Dairies
Bakeries

Butchers, Grocers
Hotels, Restaurants
and Milk Bars
Food Stuff
Manufacturers
and processors of—

Meat, Fish, Poultry,
Eggs, Vegetables,
Fruit, Ice Cream
Reserve Food
Storage
and many others.

A very limited number of Kelvinator Domestic Cabinets have been manufactured. It may not be possible for you to secure your Kelvinator this season, but we suggest you place your order with your local Dealer now, to ensure delivery as early as practicable.

Kelvinator

THE MOST TRUSTED NAME IN THE INDUSTRY

COMMERCIAL AND DOMESTIC REFRIGERATION

—is represented in all Districts throughout New Zealand

See your Local Dealer or write to:—

New Zealand Agents: **FISHER & PAYKEL LTD.**

Refrigeration Engineers, P.O. Box 841, Auckland.

Care of Sow Between Weaning And Farrowing

FOR some years the Ruakura Animal Research Station has been investigating factors affecting the nutritional requirements of the sow during the pregnancy period. A part of this work has now been completed, and was published in the August, 1944, issue of the "Journal." *

THE aim of these investigations was to examine the effects of nutrition over various parts of the pregnancy and lactation periods of the sow. From both the practical and theoretical considerations there are two important phases in the sow's pregnancy and lactation periods. The first occurs immediately after weaning. At this stage the reproductive organs are undergoing certain changes, which decide whether or not the sow will or will not come on heat. The second important phase is the latter part of the pregnancy period, when the unborn litter is growing rapidly and making demands on the mother for nutriment to build up their bodies.

It is not always possible to define what constitutes good treatment of the sow, since every man has his own ideals of looking after animals. Sows, like every other animal, are subject to the accidents of time and the circumstances under which they live. They may suffer attacks of indigestion and other internal disorders, rheumatism, colds, and chills that seem to happen in spite of the very best of treatment, and which are the cause of many disappointments. There is, however, a number of man-made causes which can be guarded against, and it is with these that the owner is most concerned.

Thus, irregular feeding, sudden changes in the quality and quantity of feed given, lack of an efficient water-supply, absence of sufficient shade in the summer, cramped living conditions in the winter, damp quarters, ill treatment by the feeder, or anything else that may be classed as poor management are happenings that prevent a sow from producing the maximum litter, and give rise to dissatisfaction on the part of the owner.

By

H. M. PEIRSON,

Superintendent of the Pig Industry, Wellington.

Successful management of the sow is largely a matter of adopting sound methods to fit individual conditions. There can, of course, be no absolute standard of management which can apply to the whole of New Zealand, but there are certain fundamental principles which must be followed if the best results are to be obtained.

Mating Sows

After the pigs have been weaned the sow will come on heat in the course of three to five days. Many owners, at weaning, turn the sow out in a bare paddock and reduce her feed supply, some even letting the sow back to the litter to dry her off. If the sow is in good condition, this policy may be all right, but it is not recommended. However, if the sow is in poor condition, this treatment might result in delayed heat period, and while the sow is in poor condition there is less likelihood of her holding to the boar. This delayed heat period may continue until the sow has improved in condition, or, although acting normally, she may not hold to the boar, this resulting in unsuitable farrowing dates and poor production per sow.

Once the sow has been served she should have opportunity for exercise, and where good grazing conditions are available this serves the purpose admirably. If her previous litter has pulled her down, no trouble should be spared to restore condition. Unless condition is put on in the early stages of pregnancy, it is very difficult to regain it later. Suitable feeding immediately after service is more important than at any other time, except perhaps when the sow is suckling a litter. Sows that lose weight during gestation cannot do this and at the same time store weight in the form of a litter that will be perfectly normal and healthy when born.

This can be remedied only by proper feeding. Under New Zealand conditions the sow during pregnancy depends very largely for her nutrition on her ability to graze and forage. While this is excellent in itself as a general practice, the feed supply for at least six weeks after service and again three weeks before farrowing needs to be supplemented with high-quality feeds, which should include those of a high-protein nature. Suitable feeding means not less than 4lb. of feed a day (according to the size of the sow), and although grass may be expected to provide three pounds of this (depending upon the season of the year), there still remains at least one or two pounds of high-quality feed to be provided. This, together with adequate exercise, will lay the foundation for a successful farrowing. In the last month of pregnancy the feeding should be increased gradually to a minimum of from 4lb. to 8lb. daily, and the sow removed to quiet surroundings where she will be subject to as little interference as possible.

*This article is reprinted in Bulletin 227, "Nutrition of Breeding Sows," and is available free from offices of the Department of Agriculture.

The pig harvest (the litter) is not only dependent on the number of seeds implanted at the time of service, but upon their survival and development. Care in selecting the boar and mating the sow at the proper time will not alone ensure a good litter; much depends on the attention given to the pregnant sow.

It is not sufficiently appreciated that the sow is in many respects the most efficient producer of our farm stock; producing two litters a year, she does not have the advantage of a long dry period during which to build up body reserves. Sows repay the owner for careful attention during the time between weaning a litter and the farrowing of the next. Everyone who has owned a sow knows what this means, and it is within most people's compass to provide that attention when they appreciate that it is worth while doing so.

Sow Efficiency

The returns obtained from pig-keeping are very closely associated with the care and attention given to sows. On farms where the sows are neglected there is a tendency for every other class of pig to have to put up with unsuitable conditions.

When sows are ill-used even the best of care given to other pigs is sadly misplaced, for they cannot take full advantage of it, and even if they could, their rapid and efficient growth could not make up for the losses that are incurred through inefficient sow management.

That the sow is the mainspring of the whole business has always been recognised by the thoughtful producer, and it is chiefly because of this appreciation that the production of 40lb. weaners gave such impetus to the pig industry.

Production

From 1921 to 1927 there was an increase of 5.1 to 6.05 pigs killed per sow per annum, and from 1928 to 1940 killings had increased up to 9.3 pigs per sow kept. This fell again in 1942 to 8.1 pigs per sow, and at the present time is showing a recovery to the 1940 figure.

Over the first seven years, from 1921 to 1927, the killings increased by less than one pig per sow, but over the twelve years 1928 to 1940 they increased by over three.

Litter recording started in 1928. Pigs seem to be just about one and a half times as well managed now as they were in 1927. This is a source of considerable satisfaction, but there is still room for improvement if we are to reach the level of other countries, where 12 pigs per sow per annum are regularly sold. Fourteen pigs per sow (7 pigs per litter) should be our aim. We might make the twelve a little sooner thereby.

Feed the Main Factor

Many pigs per sow and having enough pigs to utilise the flush of dairy by-products when available bring into prominence the necessity of having a winter feed supply. The growing of about a quarter of an acre of good roots—sugar beet, carrots, mangolds, or swedes—for every sow kept, with the object of filling up the gap between drying off the cows and when cows are coming in, cannot be ignored, if we are to obtain the greatest benefit from the sows kept.

It is to be hoped that full advantage has been taken of the £5 per acre crop subsidy for winter pig feed.

Pig Industry Broadcasts

UNDER the auspices of District Pig Councils broadcasts will be delivered in March as follows:—

Auckland.—1YA on March 21, at 7.15 p.m., "Litter Production," by H. E. Clark, Supervisor, Auckland District Pig Council.

Wellington.—2YA on March 20, at 7.15 p.m., "Carcase Quality Scheme," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

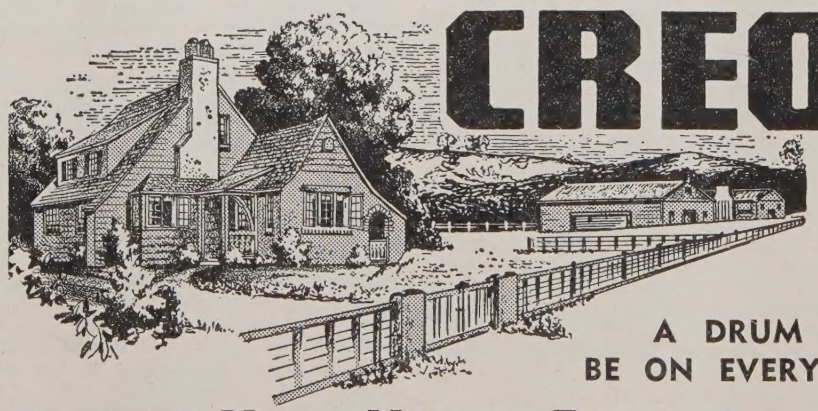
Christchurch.—3YA on March 14, at 7.15 p.m., "Value of Pigs to the Orchardist," by H. McIntosh, Supervisor, Canterbury District Pig Council.

Napier.—2YH on March 8, at 7.15 p.m., "Planning the Location of Farm Piggeries," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

FARMERS! PREVENT DECAY WITH

CREOSOTE

at 1/10th the cost of paint!



A DRUM SHOULD BE ON EVERY FARM!

Protect Your House, Barn, Garage, Sheds, Gates, and Fences

You'll get immediate protection with the easiest application. This is British Standard Specification Creosote and is available from your Storekeeper, Dairy Company or Merchant, or from the distributors—

FRANK M. WINSTONE (MERCHANTS) LTD.

71-79 CUSTOMS STREET EAST, AUCKLAND PHONE 32-610

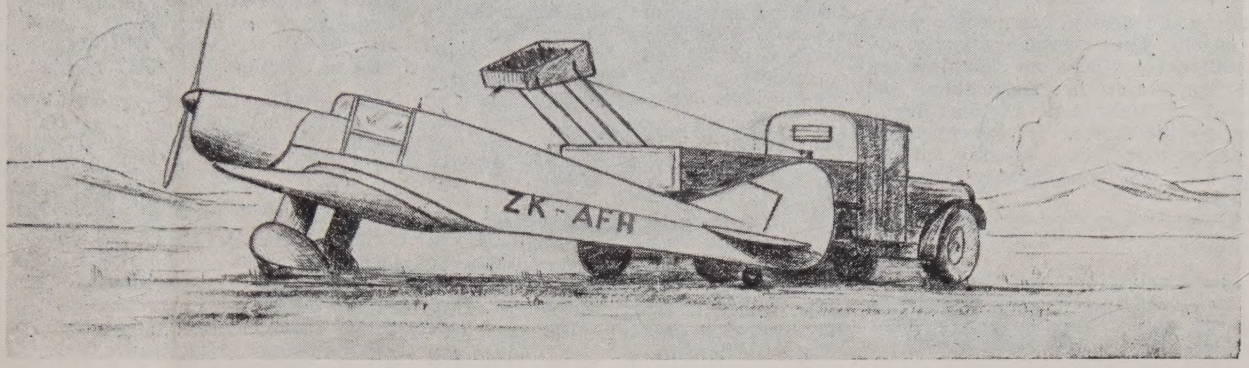
2/9 PER GALLON

in 44-gallon drums only

Freight paid to any station in the Auckland Province or F.O.B., Auckland or Onehunga. Drums 10/- each extra.

AIR SOWING

APPLICATION *and* LIMITATIONS



FARMERS in New Zealand, particularly those occupying hill-country blocks, have for some years shown great interest in reports from other countries of the sowing of seeds, fertilisers, and insecticidal and fungicidal dusts from the air. The matter of aerial sowing has been frequently discussed, and the Department of Agriculture has been urged by farmers and farmers' organisations to carry out experiments in aerial sowing in New Zealand.

THE following article has been prepared from a technical report on experiments conducted by the Public Works Department to test the distribution of seed and fertiliser from aircraft, and the conclusions drawn from the results should do much to rationalise the viewpoint regarding the adoption of such methods in New Zealand, where the peculiar topographical and climatic conditions have been frequently overlooked by those citing aerial sowing on the vast level expanses of other countries.

To determine the economic feasibility of the proposal, to develop suitable equipment, and to evolve a technique and ascertain the scheme's limitations experiments were first conducted to observe the distribution and establishment of various seeds sown from an aircraft on to sand dunes. A later experiment tested the aerial sowing of fertiliser, and the report contains an estimate by the pilot of the value of aircraft for hill-country topdressing.

Sand Dune Sowings

Sand dunes on Ninety Mile Beach about 10 miles north from Waipapakauri were the site of the first simple trials in which a length of 2in. galvanised down-pipe was inserted and sown into a bag of lupin seed, forming a spout through which the seed could be poured from the aircraft. At low tide the aircraft was flown along the beach at an altitude of 100 to 150ft. to ascertain the amount of "spread," so that a simple calculation would show how many pounds of seed per minute it would be necessary to deliver to achieve the sowing rate of 5lb. per acre, the standard rate adopted for hand sowing on sand dune protective works in this locality.

By

A. M. PRICHARD,

Aerodromes Services, Public Works Department, Wellington.

The distribution of seed was remarkably uniform over a width of some 30 yards. The edges of the "spread" were sharply defined. This was most encouraging, as it was contrary to the expected result.

It was decided to fly the aircraft at a speed of 108 miles per hour in order to sow at the rate of 20 acres a minute, and the orifice of the tube was pinched up until seed poured from it at the appropriate rate of 100lb. per minute. A second trial run was then made, when it was accidentally discovered that at certain angles of the tube to the slipstream the sowing rate could be doubled, owing to the intense suction produced, and that by controlling the angle the rate could be controlled. This fact subsequently had an important bearing on the design of a distributor.

This second run was also satisfactory, and it was decided to sow two trial areas for the purpose of studying the effects, if any, of air distribution on the germination percentage.

The areas were respectively:—

(a) A strip parallel to the littoral dune, and just behind it, where there was a varying cover of marram and spinifex.

(b) Wandering dunes inland devoid of vegetation.

The work was later inspected at periods of two weeks, four weeks, and two years. It was found that in area (a) a good uniform strike had resulted, but that permanent establishment had held only in and adjacent to pre-existing cover which had afforded shelter to the lupin seedlings. The lupin later dominated the association with a dense coverage, original bare places no doubt being filled in by self seeding in the shelter created by parent plants.

In area (b) a good strike was achieved, but violent westerly gales, carrying a heavy sand-blast, cut the seedlings off at the surface some time between the first and second inspections.

At the conclusion of the trial sowings a light breeze of 4-6 m.p.h., and at right angles to the beach, had sprung up. In order to study the effect of cross winds a further run with lupin

seed was made. The "spread" and distribution remained constant, but the fall was off the vertical by some 8 to 10 yards. A few handfuls of *Phormium tenax* seed was next distributed from the aircraft in this wind. Each handful spread along the direction of flight for about 18 to 23 yards. The sidewise distribution was, however, 70 to 80 yards, and varied between the limits of 40 to 120 yards off vertical.

The wind velocity was estimated on the beach. The average velocity of this off-shore wind over the drop of 100ft. could not be determined on account of unknown factors introduced by the dunes. It was considered likely that the velocity above about 80ft. was considerably over 4-6 m.p.h.

Conclusions:

(a) The germination was normal.
(b) Successful introduction is dependent on pre-existing cover, or local shelter from mature lupin plants.

A sheet metal container capable of holding 200lb. of seed was later fitted to the aircraft's cabin and located so that rapid loading could be effected from a servicing truck through the emergency hatch. A control valve operated by the pilot regulated the rate of flow from the container to the discharge nozzle under the aircraft's belly.

With the foregoing modifications the aircraft was flown to Waitarere Beach for further tests. Owing to a shortage of yellow lupin seed at the time it became necessary to employ blue lupin. This seed was assessed as having only one-fourth as many seeds per pound as the yellow variety and in order to sow the same number of plants per square yard a seeding rate of 20lb. per acre was required. This figure was well in excess of the maximum designed rate of discharge.

A trial run for checking distribution was flown over the wet sand at low tide. It was found that from a height of 100 to 150ft. the "spread," with the new discharge position, was reduced to 20 to 22 yards, and that the distribution was no longer quite as uniform, there being a noticeable thinning out towards the edges of the spread. A series of counts gave an average of 29½ seeds per square yard, or plants at 6½in. centres approximately. The "off vertical" amount of the dropping seed with the new equipment was about the same as that previously noted under similar conditions.

A check upon the actual seeding rate in pounds per acre was not made, as it was apparent that a distribution of seeds at 6½in. centres was satisfactory. Accordingly a strip was sown along the littoral dune from the north end of the settlement to the Manawatu Heads. Subsequent inspection showed that establishment had occurred only in sheltered places.

Conclusions:

(a) The inferior distribution of seed from the new discharge position under the belly was no doubt due to its location in an area of relatively streamline air flow and a short free drop through the slipstream.
(b) The excellent distribution from the original crude apparatus was no doubt due to the seed having to pass a considerable distance down through the swirling slipstream, and in doing so passing additional random eddies as it swept rearward along the fuselage and over the tailplane, elevators, fin, and rudder surfaces.
(c) It would be necessary to simulate these conditions under the belly or alternatively give the seed a considerable sidewise velocity from a distribution head in order to obtain economy of operation.

A further series of experiments was then carried out on wandering dunes about a mile and a half inland from the coast near Bulls. Scanty vegetation afforded some protection to seedlings from the direct effects of the wind. The wind velocity at the time of sowing was 25-30 m.p.h.

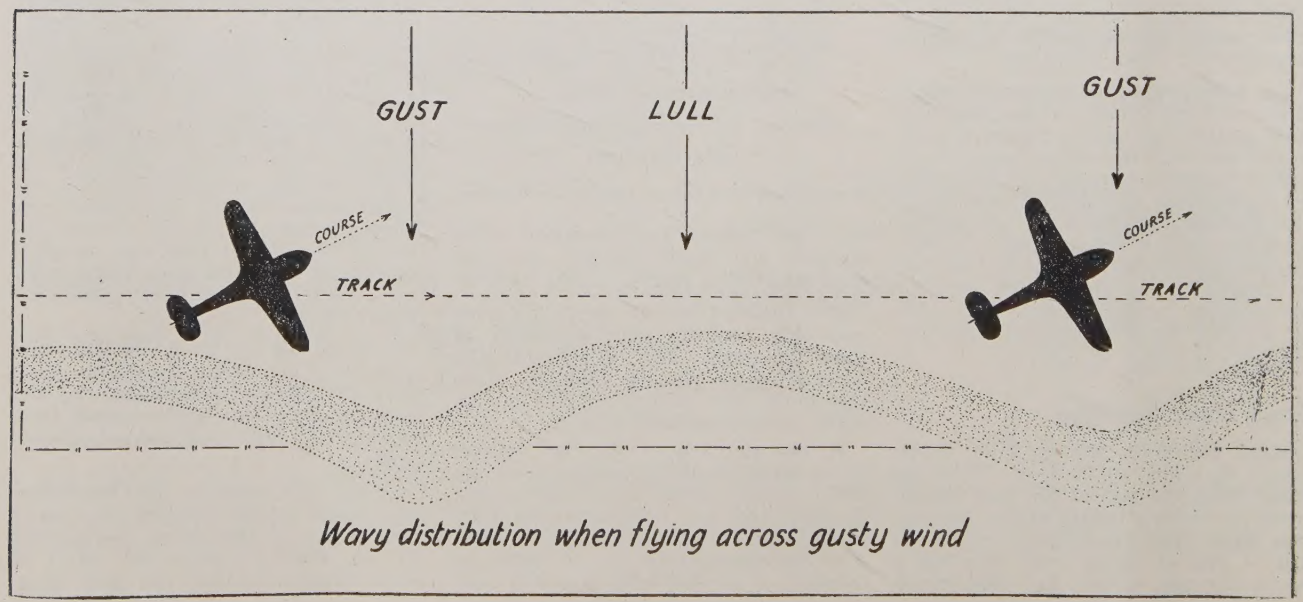
On section (1) the apparent germination was 111 per cent., due no doubt to the fact that the aircraft was flown into wind, thus reducing the forward speed and increasing the number of seeds sown per square yard.

On section (2), flown across wind, the germination was about 86 per cent., and although the aircraft was flown on a straight track, the line of distribution was quite irregular, some lengths being carried much further by gusts than others.

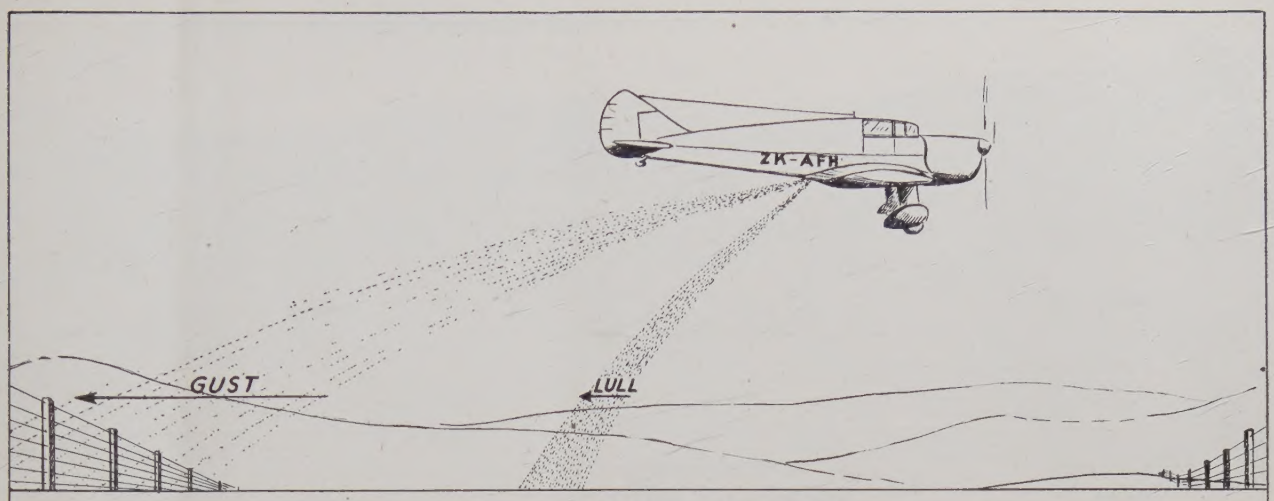
These two sections, which were sown in early winter, suffered high mortality from bird life, which attacked the cotyledon leaves, and about a month after sowing the establishment was down to 17 per cent.

Conclusions:

(a) Consideration must be given to factors of bird and insect attack, in addition to strong wind seasons, when sowing on sand dune country.
(b) Sowing across wind is more satisfactory from the point of view of uniformity of sowing rate, but is less satisfactory for accurate placing of the seed, if the wind is strong or gusty.
(c) Sowing up and down wind calls for adjustments to the seeding rate



Wavy distribution when flying across gusty wind



Patchy Distribution when flying into a gusty wind

and gives accurate placing of the seed, except at the starting and finishing points of runs. When winds are strong or gusty patchy distribution results.

Fertiliser Experiment

Granular sulphate of ammonia was loaded into the aircraft and two runs across the Rongotai aerodrome were made with the regulator wide open. The discharge rate was found to be very light and the distribution moderate.

Conclusion: The distribution of granular or powdered materials at rates of more than a few pounds per acre would call for some form of mechanical assistance to the feed and to scatter the material.

Cost of Distribution

The sowing of seed or materials at light rates, say 5lb. to 10lb. per acre, for the purpose of introducing species to suitable areas or crop dusting bears favourable comparison with hand broadcasting.

The distribution cost using Native labour on the Ninety Mile Beach dunes and including accommodation, transport of workmen, transport of supplies, wages, and supervision costs, worked out at 10d. per acre on easy country and 14d. per acre on more difficult areas, where pack horses were required.

Using the data obtained from the experiments it was found that an acre was sown in each 4 seconds of distribution time, but when allowance was made for dead flying time and reloading the hourly rate was 320 acres. The aircraft's cost is assessed at £2 per hour and that of the servicing truck at 10/- per hour. This works out at something less than 2d. per acre. Further allowances would have to be made from district to district to provide for unsuitable weather, but this should not raise the cost above 3d. to 4d. per acre.

Flight Technique

The technique evolved calls for being able to dispose of the entire load in one run. Shutting off the seed flow, turning, and coming back on to line again, as in sowing paddocks, would consume much time, and short runs would accordingly increase costs. The reloading calls for an aircraft into which seeds can be rapidly filled from a truck without stopping the aircraft's motor.

The rate of sowing per acre must necessarily be light in order that the "pay time" per flight is high in relation to the "dead time" per flight. In order to reduce dead time the landing area must be long enough to permit landing and take-off in one straight line. This is contrary to any preconceived ideas of working out of small paddocks, where taxi-ing back for take-off again consumes time.

Windage plays an important part in distribution of the seed, and a 10 m.p.h. cross wind at the present stage represents the limit for the accurate placing of heavy seeds (lupin). Lighter seeds, that is seeds having large surface areas in relation to their mass, demand lighter winds, as they "drift" further to leeward. For the same reason the sowing of pasture grass

Saved the Best Cow in our Tested Herd-

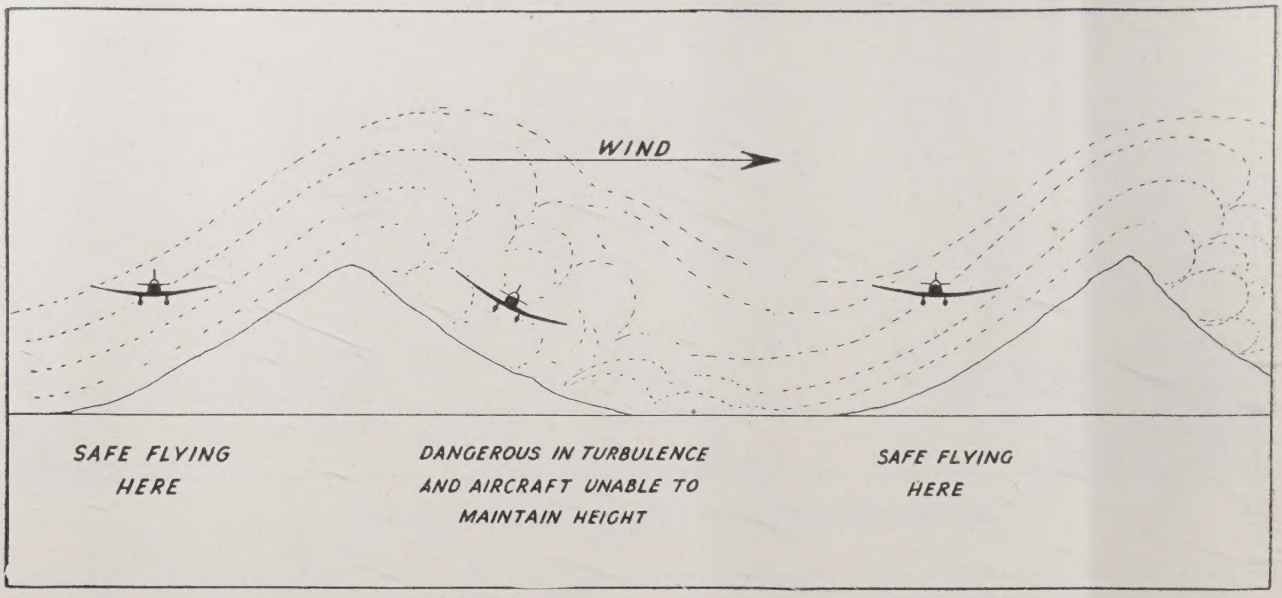
with the help of

CAMFOSA DISINFECTANT

—said another grateful farmer. Camfosa is a proven antiseptic that helps protect against germs and infection. Follow the advice of thousands of farmers throughout New Zealand and use CAMFOSA.

Sold Everywhere: 1/3, 3/-, and 11/6

Manufacturers: FRANK JACKSON, LTD., 535 Parnell Road, Auckland.



mixtures would be winnowed into strips of different species. To some extent the effect of windage can be minimised by running into wind, but in this case it is difficult to judge the commencement and termination of runs, and from the point of view of introducing species to an area is not as effective as cross wind operation.

Hill-country Distribution

Although no work has actually been carried out on hill-country fertiliser distribution, the following has been assessed from the results of the foregoing trials.

Fertilisers as we now know them, finely ground and of standard concentration, would have to be applied at a rate of one light plane load, or 200lb. per acre. Assuming the distribution to be only 30 yards wide, this load would have to be disposed of in a forward distance of 161 yards and, travelling at 100 m.p.h., would take 3 1-3 seconds approximately. This is the equivalent of emptying a standard bag of fertiliser each 1¾ seconds. Thus it will be seen that for even distribution some form of mechanical ejector would be required. The weight of this apparatus must be deducted from the payload, further reducing the weight of fertiliser carried. Split-second timing would be required on the operator's part—virtually precision bombing with fertiliser. To offset this it is, of course, possible to slow down the dumping rate and make several passes over the same run in order to secure the unit rate per acre, say five passes. In this way more uniformity could be secured without greatly increasing the cost per acre over the single pass.

The turbulent air conditions encountered when flying at low altitude in hill country would greatly restrict the regions in which work could be carried out in any given wind.

Down-flowing air on the leeward side of ranges also occupies excessive climbing time, and for economical operation the aircraft would have to work only on country down-wind from its reloading ground. These two factors together would restrict the ability of the aircraft to "work out" any particular block of country at one time, thus demanding a return visit under different weather conditions.

In an endeavour to arrive at a cost per acre basis for hill-country distribution an average run of three miles from the operating paddock is assumed and cartage and loading the aircraft costs are neglected. Starting with the aircraft loaded and ready to take off it will take three minutes to reach the job if the total climb does not exceed say 1200ft., and wind conditions are favourable for the climb, and that is if the job is down wind from the paddock. Now, neglecting the short dumping time of 3½ seconds, it will take about two minutes to return to base, another minute to taxi to the loading point, and two minutes to load and get under way again, a total of 8 minutes —7½ trips per hour or 7½ acres per hour at £2 per hour. This is 5/4 per acre, to which must be added pilot's accommodation, cartage, and labour for a rather inferior distribution, some of which has gone where it is not wanted. It is felt this cost compares unfavourably with normal procedure, which has been assessed as 3/- per acre under average conditions.

Quite apart from the question of hill country topdressing is the question of hill country grazing, and allied thereto the problem of soil erosion, and the introduction of species for control measures. The pilot furnishing the report has visited the Molesworth-Tarndale area, now run by the Lands Department, and has been able to compare it with adjacent country having similar terrain and climatic features. He considers that there can be not the slightest doubt, in this area at least, that Nature, assisted by the removal of the close-grazing animals (sheep and rabbits) and freed from the ruinous policy of annual burn-off, is making a far better job of recovering the slopes with the most suitable forms of vegetation than man could ever do with aircraft, even if the seeds of the required species were available for distribution.

THE growing of cereals for green-feed is comprehensively treated in the Department of Agriculture's new bulletin No. 208, "Cereals for Green-feed," which is available free from offices of the Department at Auckland, Wellington, Christchurch, and Dunedin.

S. OPPENHEIMER & CO., INC.
(Incorporated in U.S.A. as a Limited Liability Company)
Established 1868 in New York, 1892 in New Zealand.
SAUSAGE CASINGS
MANUFACTURERS AND EXPORTERS OF NEW ZEALAND CASINGS.
IMPORTERS OF AMERICAN HOG CASINGS.
P.O. Box 350. Office: 38-42 The Terrace, WELLINGTON. *'Phone 43-373.*

STUDIES IN FARM MANAGEMENT

A Wairarapa Pastoral Farm

NORTH Island pastoral farming consists in raising Romney sheep and beef cattle on surface-sown hill-country pastures. This article describes the farm management practices of a pastoral farm in Castlepoint County.

By
N. LAMONT,
Instructor in Agriculture, Masterton.

OF the 1¼ million acres in the Wairarapa district at least four-fifths is unploughable hill country, which bounds on three sides the flat valley floor built up by the meanderings of the Ruamahanga River and its tributaries. The bulk of this hill country lies to the east of the valley, and consists of a series of low ranges, in all about 20 miles in width, with few peaks above 1,500ft., except at the southern end. On the western side are the Rimutaka and Tararua Ranges, rising up to 5,000ft., and for the most part forest covered, with only a relatively narrow strip bordering the plain that is cleared and farmed.

The present-day outlet for the produce of the Wairarapa is the port of Wellington, and the barrier of the Rimutaka Range is now surmounted by road and rail. In the early days, however, transport "over the hill" was slow and difficult, and the early settlement of the district developed from convenient landing points round the south and east coasts. There are, in fact, many east coast residents who can clearly remember when the wool clip was shipped direct from the beaches of the Wairarapa, instead of being railed, as now, to Wellington.

One of the most important of these landing points was Castlepoint, which had the advantages of providing a good beach sheltered by a reef from the southerly gales and also of being about half-way between Wellington and Napier on the coastal track which was the land route between these two centres in the early days. As a consequence Castlepoint was an important communication centre before Masterton, the present-day main town of the Wairarapa, was in existence, and in effect functioned as a "port" for a large area of the district.

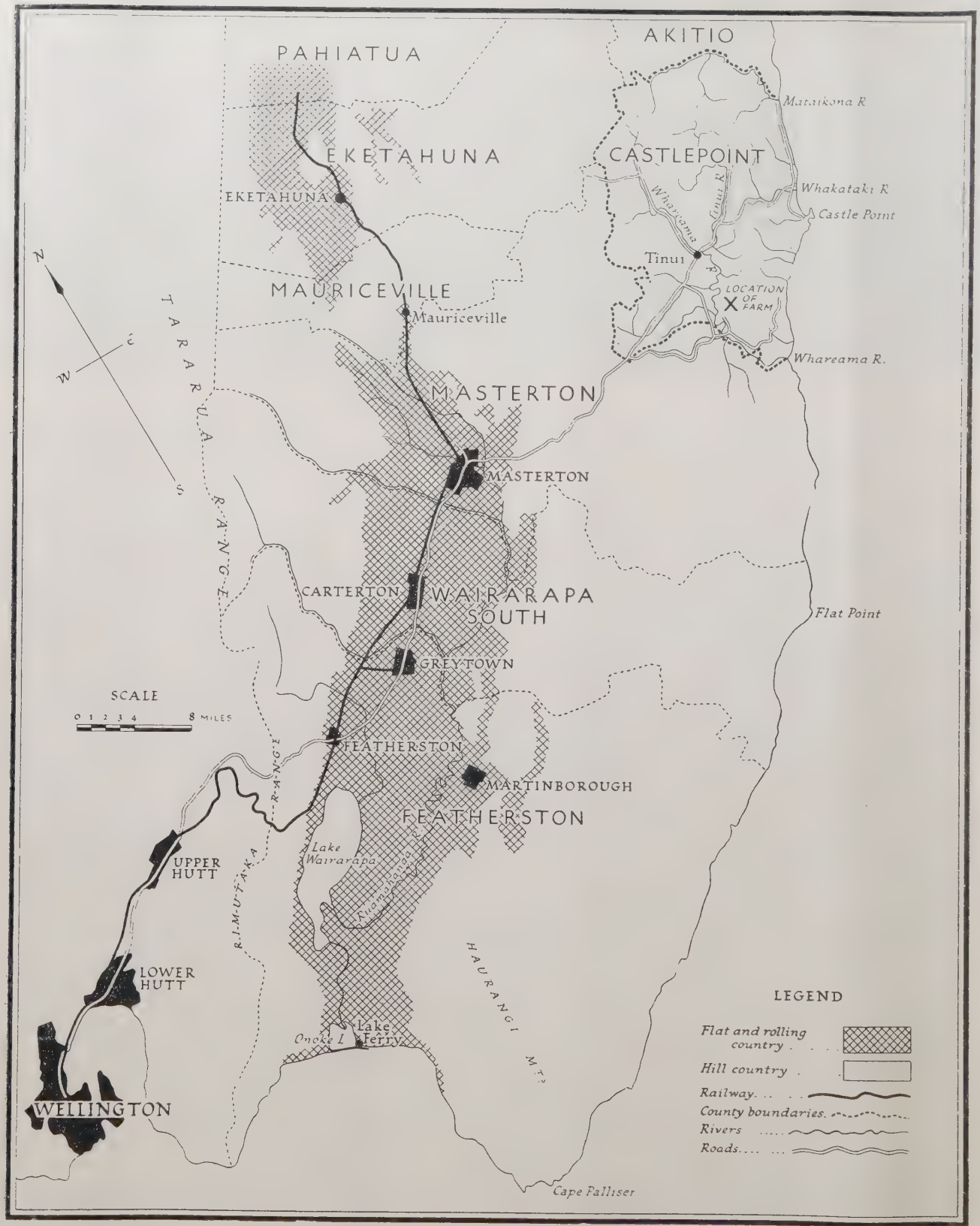
With the development of roads and faster land transport the importance of the "beach ports" rapidly diminished, and the settlers on the eastern hills began to look not to the coast but to the roads and railways of the inland valley to provide their link with overseas markets. Consequently the settlement of the Wairarapa, which had begun by spreading inland from the coast, was rapidly completed when this merged with the development of the plains.

On the average the district is only a moderately fertile one, and the quality of both hills and flats varies very considerably. Within a few miles one passes from hard poor argillite hills to good sound country with a mudstone or occasional limestone base, while on the flats deep heavy silts merge into large areas of coarse shingle country that tries the temper of plough and ploughman alike. On the other hand there are few other districts so renowned for the quality of stud and fat stock produced and for the number and variety of high-class studs. Ayrshires, Friesians, and Jerseys from local studs are known throughout New Zealand and beyond, despite the fact that the district is pre-eminently a sheep farming one, while the names of Waiorongomai and Penrose are familiar in Romney Marsh sheep circles throughout the Southern Hemisphere.

Although difficult to analyse in all its aspects, the Wairarapa district's well-merited reputation for stock quality and health is obviously closely related to its climate, which is an excellent one, at least for sheep raising. Except for the narrow strip along the base of the Tararua Ranges, where the rainfall is sometimes over 60in. per annum and dairying is practised, the annual precipitation over most of the district is in the 40in. to 45in. range. As a general rule most of the rain falls during the winter, the summers are warm and dry, and the seasonal temperature variation is not unduly great. Frosts, frequently reaching double figures, are common on the plains from April to October, with an occasional sprinkle of snow on the higher country that rarely lies on the ground for more than a few days. Although on the whole warm and dry, summers are rarely oppressive, and shade temperatures over 80° F. are unusual. On the other hand droughts are only occasionally severe enough seriously to trouble the sheep farmer.

As would be expected, the climate, the large proportion of only moderately fertile hill country, and the fact that so much of the soils of the plains are light all favour sheep raising rather than dairying, and whereas over the whole of New Zealand we find that there are about six milking cows for every hundred sheep, in the Wairarapa we have only about 40,000 dairy cows to about 1⅔ million sheep, that is, about 2½ milkers to each hundred sheep.

Favoured, in the case of grains, and made necessary in the case of fodder crops, by the dry summer climate, we find on the plains that cropping is extensively practised. Cereals and other seed crops usually total about


PAHIATUA
AKITIO
EKETAHUNA
CASTLEPOINT
Matakona R
Whakataki R
Castle Point
Whakaroma
Tinui R
Tinui
LOCATION OF FARM
X
Whareama R.
MAURICEVILLE
Mauriceville
MASTERTON
MASTERTON
TARARUA RANGE
CARTERTON
WAIRARAPA SOUTH
Flat Point
GREY TOWN
SCALE
0 1 2 3 4 8 MILES
FEATHERSTON
MARTINBOROUGH
FEATHERSTON
Lake Wairarapa
UPPER HUTT
RIMUTAKA RANGE
LOWER HUTT
HAURANGI MTS
Lake Ferry
Onoke L
WELLINGTON
Cape Palliser
LEGEND
Flat and rolling country
Hill country
Railway
County boundaries
Rivers
Roads

6,000 acres annually, while 10,000 acres of fodder crops are also grown, in particular fattening crops such as rape and kales, on which the plainsman "tops off" the surplus stock from the hill country which is not fertile enough to fatten for slaughter.

CASTLEPOINT COUNTY.

In order to take our study of Wairarapa hill-country farming a stage further, we can do little better than consider the Castlepoint County, which is located on the eastern side of the district, having the coast for one boundary, and which consists wholly of hill country, except for the small areas of silt flats bordering streams and rivers. Consequently statistics and other data relating to this county can be used to give a reasonably accurate picture of the whole of the eastern belt of hill country in the Wairarapa.

The Castlepoint area was one of the earliest settled districts in the Wairarapa, and as early as 1848 Thomas Guthrie took up a large block of country along this coast. The bulk of the area was at that time covered with fern and tutu, with only a few patches of heavier forest. Maori tradition has it that "five chiefs," i.e., five generations, before the white man came a severe drought occurred, followed by fires that swept the whole area and destroyed the heavier bush. Development was rapid, and it is recorded that in 1856 13,000 sheep were shorn on Castlepoint Station, the wool being sold in the London market for 13d. per lb.

Present-day Castlepoint is a small county of 86 holdings averaging 1,700 acres, that is, a total of 146,000 acres, of which about 40,000 is unimproved. Livestock consist mainly of about 165,000 sheep and about 16,000 station cattle. A few small dairy herds do exist, but a big proportion of the 500 dairy cows listed in the statistics are "house" cows kept by the settlers to provide their own households with milk and butter. Cropping, too, is restricted, and usually not more than 200 to 300 acres of crop are grown, consisting of fodder crops—rape, kale, swedes, and turnips.

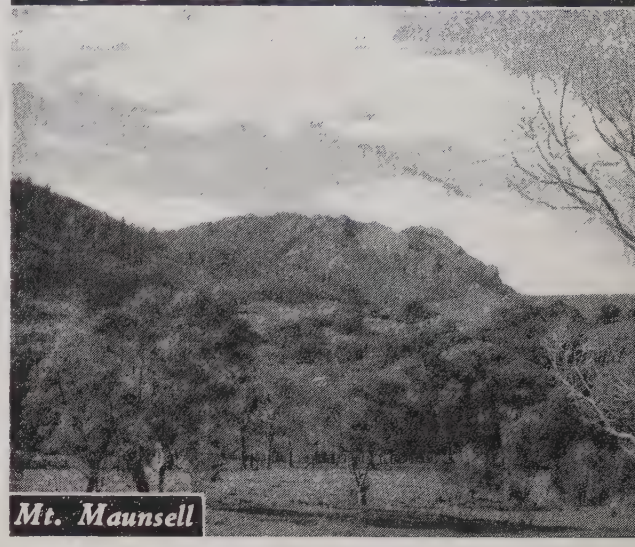
In topography the county is almost entirely in the moderately to very steep category—and the two principal soil groups are (a) the argillites, often of low fertility and, on the steeper slopes, subject to erosion, and (b) the mudstones and claystones —generally known as "blue papa," which, although inclined to slip and "slump" readily, are nevertheless healthy and moderately fertile. The carrying capacity throughout the county averages about 1½ sheep per acre and about one cattle beast to 60 or 70 acres. The sheep are almost entirely Romney Marsh and the cattle generally crossbred but dominated by the black Aberdeen Angus. Property owners possessing a fair area of ploughable flats may manage to fatten a proportion of their surplus stock, but, on the whole, the county derives its income from breeding and wool, the surplus wethers, cull ewes, and cattle being sold for fattening on the plains. The type of wool generally favoured on these dry hills is a fine crossbred, and with an eye to the ultimate sale of surplus stock for fattening a stocky, well-fleshed carcase must be maintained.

In the present day, when a more or less steady and assured market for stock as well as wool is assured, it is interesting to look back to the hungry days towards the end of the last century before refrigeration was fully developed. It is recorded that at this period, when the common breed of sheep was a half-bred merino, cull lambs were sold in the Masterton sales for 1/6 a dozen. It appears that at this price some local gardener regarded them as good value for garden fertiliser!

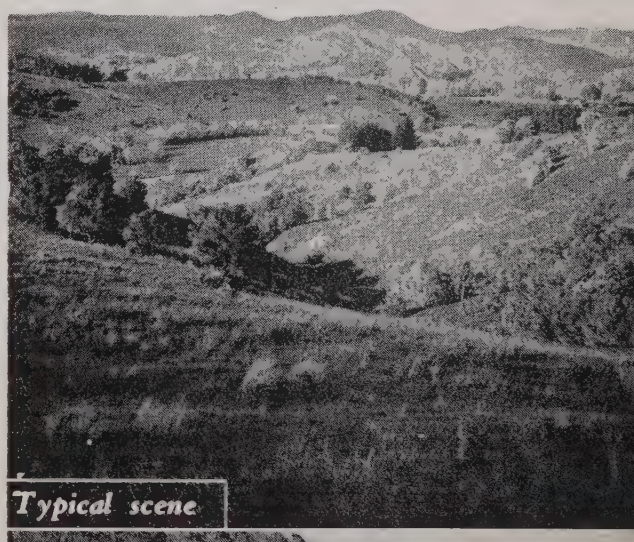
Since those times, too, the district has had its problems, and many settlers remember too well the plague of rabbits in the early 1920's and the fact that in the economic depression of the early 1930's cull lambs sold for less than 1/- each.

To-day the main problems of the district are the closely-associated ones of pasture management, scrub control, and soil erosion. While it is clearly understood and accepted that pasture quality deteriorated very rapidly in the first few years following the cutting, burning, and sowing of the virgin country, it is not at all easy to get a clear picture of the present position. Many are convinced that sheet erosion is persistently destroying the already low fertility of much of this hill country, and that

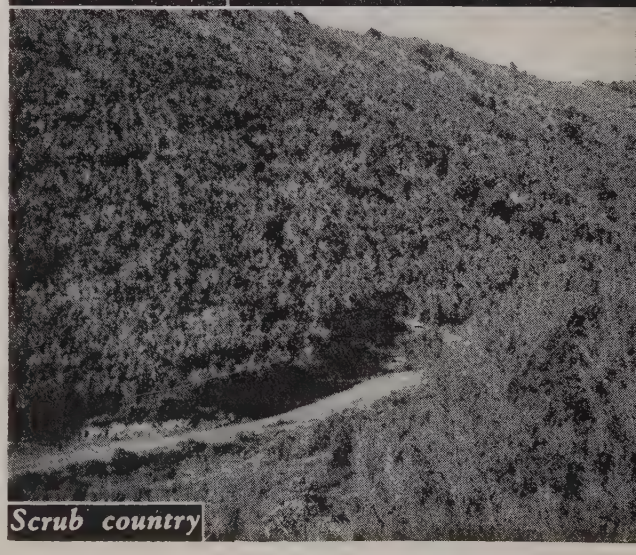
CASTLEPOINT COUNTY



Mt. Maunsell



Typical scene



Scrub country

Plan of Farm

Reference to Symbols

Boundary Fences.....

Subdivisional Fences..

Flats.....

Hills.....

Plantations etc.....

Scale : approx. 20 chains = 1 inch.

eventually much of it may have to be abandoned. Others are satisfied that management practices, consistent with efficient and economic farming, can be applied which will ensure stability, if not improvement, in pasture quality and soil fertility, while others again can produce evidence that, on all but the poorest ridges, a policy of topdressing, surface sowing, and, to a degree, rotational grazing will not merely arrest deterioration, but will substantially improve carrying capacity. Along with such improvement in pasture quality is provided also an effective check to the invasion of manuka scrub and other secondary growth. The subject is too large to discuss fully here, and suffice to say that one can see no reason for undue pessimism. There seems little doubt that deterioration has taken and possibly still is taking place, but neither are there any doubts that methods of arresting and reversing the process are known and can be applied to the economic advantage of the individual as well as the country.

One difficulty which is felt very much under present conditions of wartime restrictions, but which should lessen as post-war transportation advances, is the relative difficulty of access and the relatively high cost of freights which the county has to face. Although often exaggerated and used to justify a conservative attitude towards a policy of improvement, it is nevertheless to a large degree real. For instance, on the average the county is about 30 miles from the rail and, at least until recent years, the hill-country roads were often steep and tortuous enough to make travelling slow and tedious. The remoteness from shopping and entertainment centres, from medical and other services, and the high cost of secondary education for children are factors that are often forgotten by the townsman, but are of real concern to the hill-country man and his family. At the same time we can with some assurance look forward to a post-war world of even more efficient and faster transport, when many of these difficulties will be removed.

A WAIRARAPA HILL-COUNTRY SHEEP FARM.

To take our study of Wairarapa hill-country sheep farming a stage further we are indebted to Mr. Jas. Andrew, of Whareama, in the Castlepoint County, who has kindly made available certain information relating to his property and farming methods.

In 1867 the Rev. J. C. Andrew purchased the south-eastern portion of Castlepoint Station from the original settler, Thomas Guthrie. A mis-reading of the Rev. Andrew's initials on the wool bales from the property led to its being called the "Ica" Station, and the name has persisted as such to the present day. The original property has, of course, been subdivided many times in the last 80 years, and the original homestead was, unfortunately from the historic, if not from the domestic, point of view, destroyed by fire. Mr. Jas. Andrew's homestead occupies the same site on the banks of the Whareama River, and consequently, although his property of 1,700 acres is only a small portion of the original station, it is known as "Ica" throughout the district.

Curiously enough the area of Mr. Andrew's property, 1,700 acres, is almost exactly the average size of all properties in the Castlepoint County, but it is probably not quite typical in that it includes a rather higher proportion of river flats, over 200 acres, than does the average for the county. The quality of the remaining 1,500 acres of hill country is, however, quite typical of the mixed quality of the hills in the locality. About two-thirds would be fair mudstone with good patches and about one-third very poor heather country. Even the flats are not as useful as one might expect, as they are generally heavy clay, wet and rushy, with the usual tendency to fall away from the river and so make drainage difficult and expensive. Consequently only about half are at present in good grass.

Climatically the property is favoured by the fact that it is only 5 miles from the coast at the homestead and only 2 miles at the back boundary. This means that, in common with the whole coastal strip of the hill country, it enjoys an earlier spring than the Wairarapa plains. The winter is in effect shortened and spring growth is probably a month earlier than inland as a consequence of the tempering effect of the sea. The subdivision of the property as shown in the plan has been designed, of course, to provide first for access to water for the stock and secondly for ease of mustering and grazing control. The property is, in fact, well favoured in respect to stock water supply by the presence of the river on one boundary and a permanent stream running roughly through the centre of the property. Unlike many east coast properties which have to rely extensively if not exclusively on dams, the "Ica" property has only one.

Pastures and Pasture Management

With the exception of a small paddock of lucerne which produces about 15 tons of hay a year, the food supply of this property is entirely grass. The lucerne hay is, in fact, largely required for house cows and horses, but a reserve is maintained and is used to sustain cattle in a severe

TERRIFIC WHITE HEAT 2000° FAHRENHEIT
SPELLS DOOM FOR NOXIOUS WEEDS!

Use the BEST BURNER—science's newest discovery—for Nassella Tussock, Blackberry, Gorse, Rushes; sterilises poultry houses, floors, yards; burns off drain sides, water races, gravel paths.

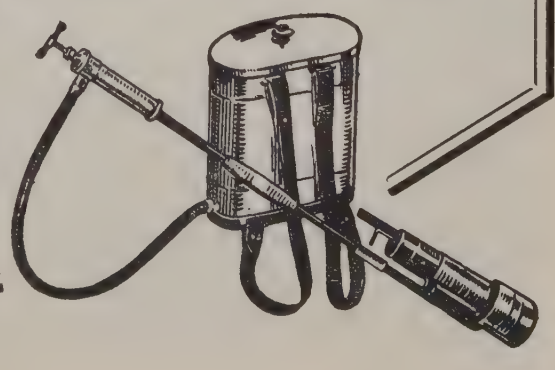
IT IS *NOT* A FLAMETHROWER

Weighs only 28lbs. fully charged; requires no pressure pumping; burns only ½-gallon of diesoline an hour—cost approximately 6d.

SAVE TIME — LABOUR — MONEY — with a BEST BURNER

Send for Free Pamphlet to the Manufacturers:

The
BEST BURNER LTD.
Cnr. Oxford Terrace and Montreal Street Christchurch.
(P.O. Box 291)
'Phone 33-851



Aerial view of "Ica" Station. Homestead in top left-hand corner.

winter. The pastures on the flats are practically all over 50 years old, and although until recently they had had no topdressing, they are of quite good quality, at least where drainage is satisfactory, and contain a high proportion of perennial ryegrass and white clover of apparently good perennial and productive type.

On the hills pasture of much lower grade is to be expected, and there we find principally danthonia, sweet vernal, and browntop, with a little striated clover and trefoil. On the harder slopes the sward is thin and open and must inevitably permit some sheet erosion to take place.

A close examination of these poor pastures almost anywhere on the Wairarapa eastern hills will reveal, however, that stunted ryegrass plants do persist with surprising frequency, and this accounts in large measure for the excellent results that have been obtained on this class of country by introducing subterranean clover together with phosphatic topdressing. Experimental plots on Mr. Andrew's and other properties have demonstrated an extraordinary transformation in the course of two or three years, and one feels that, with the return of more normal conditions, improvement policies based on these results will be extensively undertaken.

Naturally, under present conditions, it is a physical and practical impossibility to attempt large-scale improvement schemes on the hill country, which is not topdressed, but a similar, if less rapid and spectacular, improvement can also be brought about by improved grazing technique. The application of rotational grazing principles to hill-country properties is not always easy, but, as Mr. Andrew is finding, a definite response in the form of higher carrying capacity and improved sward is obtained from a policy of stock concentration with intermittent grazing and spelling, as compared with extensive continuous grazing. The importance of any process that can even slightly improve pasture quality cannot be overemphasised on country where not only is grass practically the only food supply for stock, but also where the vigour and density of this pasture may be the factor that decides whether further sheet erosion and deterioration persist or stability and even improvement can be initiated.

Secondary Growth Control

Closely allied with pasture management is the problem of control of secondary growth, which, on this country, is principally manuka scrub. The essence of Mr. Andrew's policy in this respect is simple persistence and determination at all times to keep right on top of the scrub. Originally, cutting, burning, and sowing had to be carried out every few years, but eventually the scrub was reduced to patches which could be controlled by grubbing. This is still a regular job on "Ica," but each year it becomes a smaller one.

The point at which the slasher and fire-stick are displaced by the grubber and manure bag is not always easy to decide. It should be borne in mind that fire is a two-edged weapon and, if used for too long, can seriously reduce the competitive strength of the pasture, making it weak and open and allowing manuka seedlings to re-establish readily. Fire should be abandoned immediately grubbing and pulling is a reasonable proposition, and subsequent surface sowing and topdressing of the treated patches will build up the sward density to a point where it can resist further invasion. This point, which has now been reached on the "Ica" property, can be gained only by a determined and persistent policy of "attrition" against the scrub and by always remembering that the seed shed by plants neglected for the sake of a few hours' labour one year may mean days of work in the following years.

Stock and Stock Management

It is very difficult to select one property on the Wairarapa east coast hills that will present even a reasonably typical picture of the practices of the whole area. Naturally one finds that, where farming conditions are hardest, the kind of farming practised is most restricted; and conversely, under the relatively attractive conditions of the country under consideration, a reasonable amount of scope is permitted to individual choice and preference. Furthermore the country is so mixed in respect to topography and soil types that each man must of necessity evolve a system of management to suit his particular conditions. In the following brief outline of the methods adopted at "Ica," therefore, it is not suggested that they represent the ideal for any other property, but simply give a broad picture of one type of management that is efficient under the conditions operating.

The sheep are dominantly Romney Marsh and carry a fleece of the fine-crossbred type which is favoured on the harder hill country and which gives an average yield of 9lb. of wool per head. In respect to carcass, the "Ica" sheep are an excellent blocky type ideally suited for their ultimate fate as fat ewes and producers of fat lambs. The ewe flock totals about 1,300 of all ages, from which are tailed 1,000 to 1,100 lambs in an average season. All ewe lambs are kept and the flock replacement, about 300, selected shortly before they are first put to the ram. Of the wether lambs, a few may be sold as lambs if the lambing was good, but usually about 500 are kept until they are 4-tooth, when they can be sold either as fat or forward in November. Similarly the 200 cull ewe hoggets (rising or actual 2-tooth) are sold fat in the autumn or as "run with Southdown ram" and sold in May. This practice of having a fairly large proportion of the total flock as dry sheep is designed to obtain the most efficient use of the harder country, and also to provide a safety margin, in that the wethers particularly can be made to stand a lean period, while ewes and young stock are treated as well as possible.

Automatic
WATER PRESSURE SYSTEM
(No. 103)

The illustration shows a Pressure System which is entirely Automatic.

Its operation is controlled by an electric switch, is self starting, self stopping, self priming, self lubricating.

45 gal. Capacity. 60lbs. Pressure.

The air supply in the tank is controlled by the Automatic Air Volume Control.

No personal attention necessary.

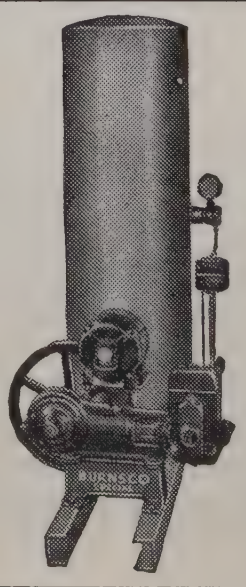
230 Gallons Per Hour.

Write for further interesting details and prices to:

JOHN BURNS & CO. LTD.

CUSTOM STREET EAST, AUCKLAND, C.I.

Branches at WELLINGTON, CHRISTCHURCH, GISBORNE, GREYMOUTH and WHANGAREI



VIEWS OF "ICA" STATION

The homestead

Typical country

River flats

Hoggets

Cows and calves

Ewes and lambs

As already indicated the lambing percentage at docking time is usually from 90 to 95 per cent., but, as Mr. Andrew has always made a practice of counting all dead lambs, he has discovered that up to 120 per cent. are dropped. This rather substantial loss from lambing to docking time is partly due to bad weather, but partly to some cause not yet clearly understood. Normally there is very little loss of lambs after docking, so that the natural increase is generally over 90 per cent.

On a hill-country property where winter supplementary crops or hay reserves are impossible it is obvious that total stock carried must approximate the number that can be provided for adequately from pasture available during the winter. Consequently, there is invariably a spring and summer surplus, and as this surplus growth rapidly becomes too rank for consumption by sheep, it must be removed in some other way if the pastures are not to suffer unduly from the mat of dead grass that would accumulate. The rough nature of the country precludes mechanical control, and hence the need for the "hill-country mowing machines"—the cattle. The number of cattle on "Ica" is usually from 180 to 200 of all ages, and these are found to be sufficient for pasture control. The 100 breeding cows are all Aberdeen Angus and produce about 70 calves each year—two-thirds by Aberdeen Angus bulls and one-third by a Hereford bull. The calves run with their mothers until September, and, except for 10 Aberdeen Angus heifer calves kept each year for maintaining the herd, are sold as weaners in the spring. Each year, too, 10 aged cows are sold, usually as fats. The wisdom of the policy of running only female cattle may be questioned, since it is generally accepted that cattle should be "implements" for pasture control and not profit makers in themselves. On the other hand, on a fairly well-subdivided property, and with even a small quantity of lucerne hay as a winter supplement, Mr. Andrew finds that it is possible to secure adequate pasture control with cows and young stock only, and at the same time treat them reasonably well.

Farm Calendar

Probably the simplest way to consider the general farm management is in the form of a calendar of farm operations, and possibly an appropriate starting month is March, when the "tupping" season commences. On "Ica" about 35 rams are kept, and 20 of these are put out on March 12 each year, the remainder following about four weeks later.

The main item in April, usually towards the end of the month, is crutching, and in May, after about an eight weeks' tupping season, the rams are taken out. May, June, and July are essentially the "odd job" months, and there are always such matters requiring attention as scrub and gorse grubbing, fence repairs, draining, and firewood cutting.

By July, too, ewes are becoming heavy in lamb, and all mobs are visited at first every second day and then daily. When the lambs commence to arrive in early August a twice-daily round of the ewes is considered necessary, and it is rarely that a good shepherd does not make his wages in lambs and ewes saved by this attention.

Two main dockings are the rule at "Ica"—the first usually in early to mid-September and the second in early October. In addition to docking, October sees shearing of the dry sheep, together with dagging of ewes and general preparations for the shearing of the we flock in November. If the ewe shearing should be delayed by wet weather, the ewes and lambs may be shorn together, but more often the ewes are finished in the first half of November and the lambs shorn separately in early December. This practice of shearing lambs is found necessary at "Ica," owing to the presence of a certain amount of bidi-bidi or hutawai, and is considered worth while on this account and also because of the fewer losses that occur the following spring than would be the case with heavier-woolled sheep.

In January the lambs are weaned, usually drenched, and put on to fresh pasture; sometimes a small area of new grass and rape is available. This month also dipping is carried out while even a small area of lucerne needs much attention at this time of the year with the limited facilities available for handling the crop.

February completes the brief calendar with culling and sorting in preparation for tupping. In the average season a certain amount of fresh growth can be saved up for "flushing" the ewes prior to putting out the rams—a policy that is reflected in the good lambing percentages obtained. Throughout the summer—from November to March—the surplus stock are combed out as occasion arises, and the "fats" and "forwards" culled out for sale.

Disease and Disease Control

As mentioned earlier a feature of the Wairarapa district, and this includes the hill country, is its good record for stock health. Apart from occasional mechanical accident the death-rate from sickness and disease in the sheep on "Ica" is so low as to be negligible, and is confined almost wholly to the hoggets, where it is a little more than 0.1 per cent. Mr. Andrew very wisely puts more faith in fresh healthy pasture than in drenches. The only losses of any magnitude are those in lambs between lambing and docking, and these are due to many causes, known and unknown, but not necessarily to specific diseases. Usually there are a few cases of bearing trouble in ewes, probably an average of ½ per cent., and only a few of these die or have to be destroyed. Ewe losses from all causes, including accidents in gullies, would not amount to more than 2 or 3 per cent.

The only lick used is a little rock salt.

Labour

Permanent labour on "Ica," in normal times, consists of the owner and two general hands, usually young men desirous of learning the hill-country farming business. In addition, for most of the year, two or three men are necessary for grubbing gorse and scrub, and at shearing time two shearers also are employed, with the permanent staff acting as "shed hands."

Death to RATS and MICE!

Exterminate these disease-carrying, destructive pests wherever they may be—in open burrows, poultry yards, grain stores, haystacks and buildings. Cyanogas is safe, economical and absolutely effective, killing instantly with hydrocyanic acid gas.

CYANOGAS

N.Z. Distributors:—
WRIGHT STEPHENSON & CO. LTD.
ABRAHAM WILLIAMS & CO. LTD.
All Branches.

Summary and Conclusion

The Wairarapa district as a whole is favoured by a climate that is very suitable for the production of grain and seeds and for the raising of high-quality sheep. Owing to the hilly topography of the bulk of the district, sheep raising is the major industry, and the total sheep population is about 1⅔ millions, which are almost entirely of the Romney Marsh breed. The Castlepoint County is typical of the hill country of the district, consisting almost wholly of only moderately fertile mudstone hills rising up to 1,500ft., and having, too, a very interesting history, during which it has played a prominent part in the settlement of the whole district. With one or two reservations, which have been indicated, the property of Mr. Jas. Andrew can be taken as sufficiently typical of the farms of this area, and it has been seen that income is obtained partly from wool and partly from the sale of surplus stock —aged and cull ewes, wethers and cattle. On the other hand, stock purchases are restricted to rams and bulls. For instance, Mr. Andrew's "Ica" property of 1,700 acres carries about 3,000 sheep and up to 200 head of station cattle, which respectively include 1,300 ewes and 100 cows, producing each year about 1,100 lambs and 70 calves. After retaining 300 ewe lambs and 10 calves for flock and herd maintenance, he disposes annually of over 500 wethers, 200 ewe hoggets, up to 300 cull or aged ewes, 60 weaner calves, and 10 aged cows. The total clip of fine crossbred wool is approximately 24,000lb. The principal outgoings are wages, including shearing, and the replacement of rams and bulls. The future of this country is sometimes the subject of gloomy prophecy, and one hears too much of erosion and deterioration. One can be assured on the other hand that the problems of this hill country are only to a negligible extent technical ones, and, to the extent that they do exist, they are almost wholly economic. As a technical problem, soil erosion and pasture deterioration can be arrested and reversed by the application of knowledge already at hand, and even if some poorer areas would be more profitably utilised by planting to trees of ultimate commercial value, the bulk of this country can be farmed as sheep country even more productively than at present, provided always that economic stability can be assumed.

In conclusion a few words may perhaps be said of the social and human aspects of the hill-country farming life. It has already been pointed out that many of the services and facilities that are taken for granted by the townsman or even the flat land farmer are wholly lacking 30 to 50 miles from even a reasonably-sized town. The life is strenuous, often exacting and tedious, both for the farmer and his family, but on the other hand it is clean and healthy, and satisfying as only a creative life can be. Neither is it difficult to visualise a post-war world of even more efficient transport facilities that will do much towards finally eliminating the loneliness and remoteness from medical and other services that are of real concern to the hill-country family. While these amenities will not shelter the shepherd or his young lambs from the southerly gales, we hope, too, that they will not diminish that sense of freedom and independence that the hill-country man in his turn takes for granted, nor detract from the fine spirit of community responsibility and open-handed hospitality that is so genuinely characteristic of himself and his family.

Acknowledgments.

The maps in this article have been supplied by courtesy of the Lands and Survey Dept., Wellington. The aerial photograph is by N.Z. Aerial Mapping, Ltd., Hastings.

Price complete with Comb and Cutter as illustrated, and with 18ft. of flexible cord.

£9

COOPER-STEWART *Electric*

CLIPMASTER

The smooth cutting CLIPMASTER is light but has rugged lasting durability. It is the most powerful of its kind ever made. Ball-bearing motor inside handle . . . completely insulated and no ground wire required. One man does the job of two in half the time.

If your local Stockist is unable to supply the CLIPMASTER write to:

The COOPER ENGINEERING CO. (N.Z.) LTD.
NATHAN'S BOND BUILDING. CUSTOMS ST. EAST.
AUCKLAND, C.1.

Supplies of Nitrate of Soda

FOR some time nitrate of soda for horticultural purposes has been in short supply, but it now appears likely that New Zealand's quota for 1945 will arrive within the next month or so. Supplies will be distributed through normal wholesale and retail channels and will be available for application to market gardens and orchards. Small quantities may be purchased for application to home gardens.

Home-made Hive Equipment

THE manufacture of hive equipment requires up-to-date machinery and an operator who is capable of turning out thoroughly accurate work. Most beekeepers are prepared to leave the manufacture of their equipment in the hands of skilled tradesmen, but for those who wish to make up their own material, the following information may be helpful.

Standard Equipment

The advisability of scrupulously observing correct measurements in the manufacture of hive material cannot be too strongly emphasised. Beekeepers in New Zealand are fortunate in that the pioneers of the industry decided to concentrate on the almost exclusive use of the Langstroth hive. This has been a great help to the manufacturers of apiary equipment, as it enables a free interchange of hive parts whenever required between established apiaries throughout the Dominion. It is not long before the beekeeper who has departed from standard measurements when making his own equipment realises his mistake. Those contemplating the making up of their own hives and frames should adopt the motto: Accurate work and correct measurements.

By

C. R. PATERSON,
Apiary Instructor,
Hamilton.

The Saw Bench

The saw bench should be of a type that will allow of accurate cross-cutting and ripping. An electric motor of from ½ to 1 h.p. is most suitable for driving power; very often the motor driving the honey extractor can be used during the winter months on the saw bench. A bench with a rising top is essential for making hive material. Two saws, a cross-cut and a rip-saw of from 8in. to 10in. diameter, are most suitable for the job; heavier saws take out too large a saw-cut, especially when ripping. Smooth, clean work can be obtained only by careful attention to the condition of the saws. They should be accurately set and always kept sharp. Remember at all times to treat the saw bench with respect, as any carelessness on the part of the operator may mean the loss of a finger or two.

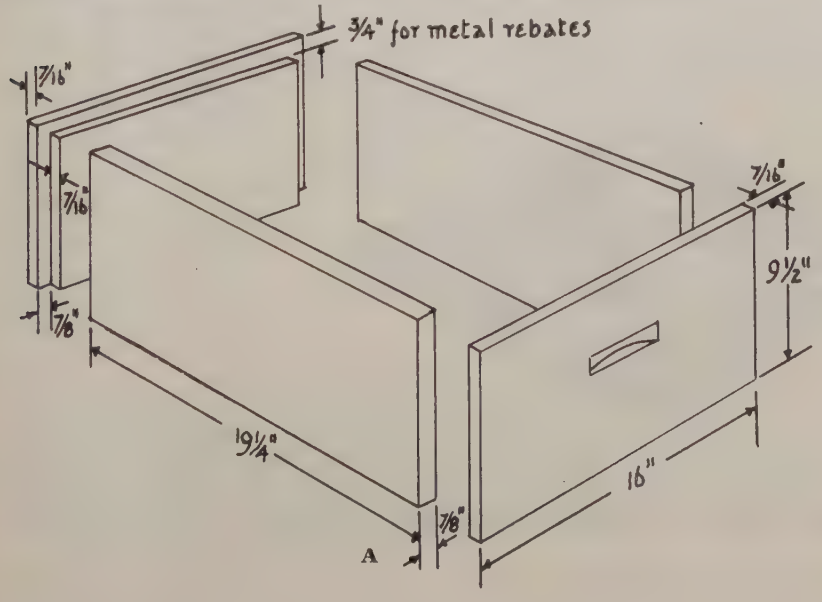
Hive Bodies or Supers

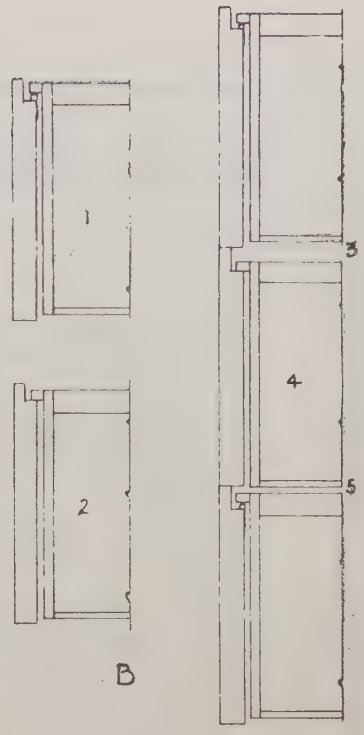
The timber used in the construction of hive bodies or supers of the Langstroth pattern may be white pine, *pinus insignis* or rimu (red pine) and, if ordered direct from the mill, the best size to purchase is 10in. by 1in. in 12ft. lengths. Five superficial feet or six running feet of this timber is required for one super. When well seasoned, the timber can be dressed on both sides down to ⅞in. for thickness and 9⅝in. wide to allow for any further shrinkage that may take place. The standard measurements of a super ready for use are:—

Outside: 20in. long x 16in. wide x 9½in. deep.

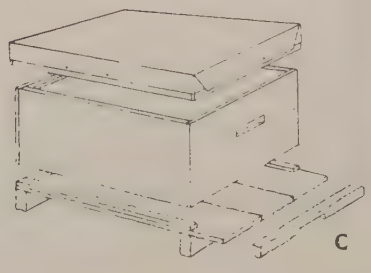
Inside: 18¼in. long x 14¼in. wide x 9½in. deep.

If metal rebates are to be used, the depth of the cut taken out of the top of each end should be ¾in.; if not, the cut should only be ½in. Fig. B shows the effect of mixing supers which have been manufactured for the use of metal rebates but have been put into use without them. Hives constructed as shown in Fig. A allow double nailing and will stand up to plenty of hard handling. The ends of the sides must be cut dead square, otherwise the hive will not sit level when assembled.



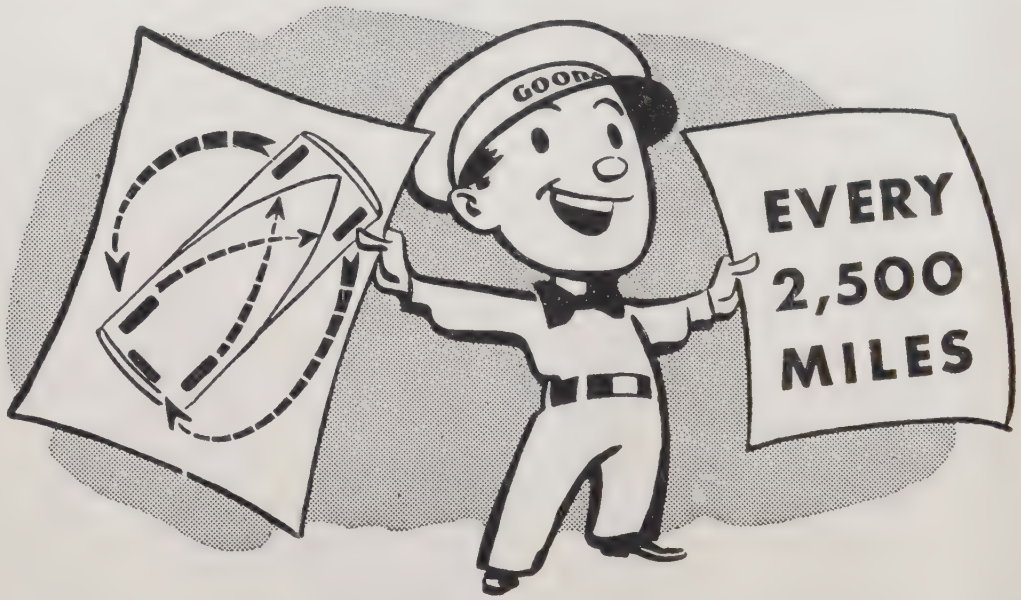


1. Frame resting on metal rebates; 2. Frame resting on wood rebates; 3. Excessive bee space; 4. Effect of mixing supers with and without metal rebates; 5. Insufficient bee space.



ROTATE TYRES REGULARLY

switch every 2,500 miles for long tyre life!



Tyres need a change—from one wheel to another. Rear tyres wear faster than front tyres because they supply traction. Cross switching tyres regularly every 2,500 miles insures long uniform wear.

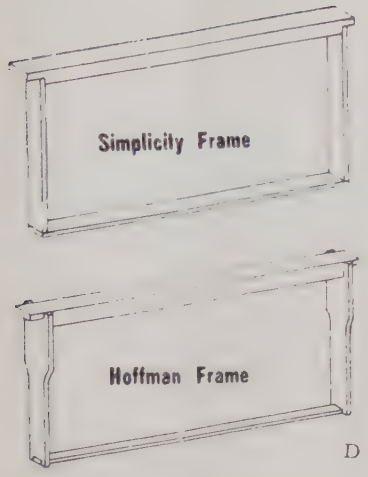
And your tyres will last longer if you will: *maintain proper wheel alignment and brake adjustment* to avoid grinding off tyre treads—and *have them inspected regularly for small cuts and bruises* to repair and protect the carcass.

In fact, you can get much *extra* tyre wear by following these simple rules: (1) *always drive slowly,* (2) *keep tyres properly inflated,* (3) *avoid bruising tyres,* and (4) *avoid sudden stops and starts.*

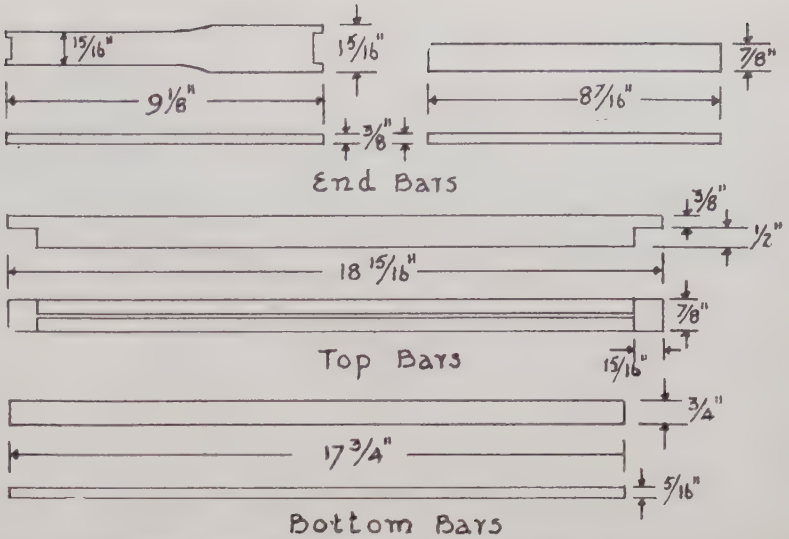
The Goodyear Dealer will gladly help you get every possible mile of wear from your tyres.

GOODYEAR TYRES

Goodyear products are manufactured in Argentina, Australia, Brazil, Canada, Eire, England, India, Mexico, Peru, South Africa, Sweden, The United States. Branches, Distributors and Dealers throughout the world. (44.)



D



Floor Boards

Floor boards are easily made up from odd timber as shown in Fig. C. The runners of 4in. x 2in. or 3in. x 2in. are best made of totara, if available, as it is here that the floor board makes contact with the ground Some beekeepers prefer to make the floor boards without the wooden runners and use instead concrete blocks on which the board rests. The fillets of wood nailed on to the edges of the floor board to make the entrance are generally made of timber $\frac{5}{8}$in. to $\frac{3}{4}$in. thick. This allows a good, wide entrance during the summer months, and in the winter reduced entrance blocks should be placed in front as shown in Fig. C.

Hive Covers or Lids

To make hive covers or lids, a rim is made of timber approximately $\frac{3}{4}$in. thick and 4in. wide and of a size that will allow it to slip freely over a standard hive of 20in. x 16in. The ends can be half-checked similar to the supers to allow of double nailing. On this rim is nailed a wooden cover of timber of even thickness. Four strips of wood about $\frac{3}{8}$in. wide and $\frac{1}{2}$in. thick are then nailed inside the lid. These fillets allow an air space over the mat when the lid is in place, and also overcome the risk of crushing bees which may be on the top of the frames when the lid is replaced quickly.

The wooden lid should be well painted, especially the sides, before the metal cover or malthoid is tacked on. It is advisable to paint also the inside of the rim, as this will prevent moisture from reaching the hive mat through capillary action during long periods of wet weather. Lids made with narrow sides are more likely to blow off than those made with 4in. timber. Care should be taken to tack the metal cover on neatly. Malthoid has a tendency to crack where the edges are being turned down, but if it is placed in the sun for a short time it will become pliable and the tendency to crack will be reduced.

Frames—Hoffman and Simplicity

Hoffman and Simplicity frames should be cut from good, clean, well-seasoned timber. Accurate workmanship is required if a satisfactory frame is to be made. Fig. D gives the measurements for either the self-spacing, full-depth Hoffman frame or the Simplicity, which, as its name implies, is much easier to make up.

"HUME" CONCRETE PRODUCTS

FREE

Illustrated literature gladly sent post free & without obligation, on request. Please state item or items in which you are interested.

- LIMITED SUPPLIES AVAILABLE
- SEPTIC TANKS, STORAGE TANKS
- TROUGHS, WASHTUBS, CHIMNEYS
- TERRAZZO SINK BENCHES, BOILER
- FRAMES, PAVING SLABS, CONCRETE
- PIPES, SWIMMING POOLS, ETC. . . .

HUME PIPE COMPANY (AUST.) LTD.
Inc. in Aust.
BOX 1734 5th FLOOR DILWORTH BLDG. AUCK.
BOX 287 YORK HOUSE, WELLINGTON
RAVENSBOURNE, DUNEDIN
BOX 2 HORNBY, CHRISTCHURCH

All orders will be filled in strict rotation.

For the feeding of fowls or other livestock where only small quantities are required a one quart tin filled, but not pressed down, will contain the following weights:

Barley	.. ..	1lb. 6oz.
Bran or pollard	..	10oz.
Maize	.. ..	1lb. 12oz.
Meat meal	.. ..	1lb. 8oz.
Oats	.. ..	1lb. 4oz.
Peas	.. ..	1lb. 14oz.
Wheat	.. ..	1lb. 14oz.

LET FRIGIDAIRE
STAND GUARD FOR YOU

Once upon a time, when "there was plenty more where that came from," perhaps you could afford to be philosophical about Waste. Today, when the call is for ever-increasing production, it's a different story and it is vitally important that your own family's share of the precious foods you produce, is not only used to the full but kept in the best possible condition.

Only Frigidaire can give you the fullest measure of adequate food-protection and you will be amazed just how much can be stored away . . . and thus saved.

Fill in this coupon today and take the first step to eliminating food waste on the farm-front. You'll also ensure that your family's food is kept fresh, wholesome and appetising.

FRIGIDAIRE

DIVISION OF GENERAL MOTORS NEW ZEALAND LTD.

* POST THIS COUPON.

FRIGIDAIRE NEW ZEALAND,
PETONE.

Please send me full particulars of Frigidaire Models by return mail.

NAME .....

ADDRESS .....

.....

.....

Killing, Dressing, and Curing Livestock on the Farm

MOST New Zealand farmers, in the remoter districts at any rate, have of necessity made themselves familiar with the rudiments of butchering. While the equipment and hygiene provisions for home killing on many farms leave little to be desired, on some the methods are rough and ready, to say the least. It is no doubt true, too, that some farmers are deterred from doing their own killing by a lack of knowledge of the finer points of butchering. It is hoped that the information in this article will encourage more efficient and hygienic killing of meat on the farm, while the guide to the various cuts and their uses and the curing of meat should lead to more economical use of the carcass.

By

W. T. BROWN,

Fields Instructor, Taumarunui.

(Now serving overseas with the R.N.Z.A.F.)

THOROUGHLY hygienic conditions are imperative in the proper handling and preparation of all foodstuffs. Conveniently constructed buildings and yards, together with a plentiful supply of water, heating facilities, and good drainage, form the fundamental basis for acquiring and maintaining clean surroundings and clean products. On the average farm, where only a limited amount of killing is done, at least the provision of a small yard, specially constructed for the purpose of butchering, is warranted.

Building and Yards.

A plantation of trees is likely to offer an ideal situation for the yard, for not only does this afford the requisite shade, with cool temperatures, but it may also provide a ready-made gallows. Failing the plantation, a well-ventilated shed and a small yard will be found most convenient. A shed measuring 10ft. by 12ft., with a stud of at least 10ft. and a 6in. x 4in. hardwood hoisting beam if cattle are to be handled, together with a 12ft. by 10ft. yard, should meet the requirements. A lower beam, 6ft. from the floor and with a 9in. swivel hook, gives the most suitable clearance for sheep or pigs.

The floor of the shed and yard should be of concrete, with sufficient fall towards drains to ensure good drainage. Removable duckboards, built in conveniently-sized sections and on which mutton carcasses are skinned, should be provided for the floor of the shed. Where pigs are slaughtered a scalding trough and the facilities for providing from 20 to 30 gallons of boiling water will be found necessary. A block and tackle will facilitate the handling of most carcasses, and is an essential for pigs and cattle.

An adequate and convenient water supply is essential for the washing and scalding of carcasses and for the cleaning down of shed and yards. It is even more essential that this water be fresh and clean, and a running supply should be provided wherever possible.

Knives.

A 7in. straight-bladed knife will be found most serviceable for "sticking" purposes. A knife of similar size, but with a curved blade, is the most suitable one to use for skinning. The butt end of the handle of this knife, which is usually square when purchased, should be rounded off, as the handle as well as the blade will be used to perform some of the functions during skinning. It is advisable to maintain a keen edge on the blade whilst working, and a good steel should always be readily at hand. A wide-mouthed sheath to carry the knives facilitates the work and reduces the risk of injury.

Essentials of Slaughtering.

The main essentials in the killing of all animals are to avoid unnecessary pain, to avoid bruising the flesh, and to make the bleeding of the carcass as complete as possible. The weight of blood in an animal's body contributes 8 per cent. of the total body weight. By the most thorough bleeding methods employed the amount of blood obtained approximates to only 5 per cent. of the body weight.

To ensure the first essential use a sharp knife—pigs and cattle are usually stunned before the knife is applied—and work speedily and deftly. Bruising may be avoided by the careful handling of stock prior to slaughtering. Sheep and pigs—the latter provided they are properly stuck—bleed quite freely, so that thorough bleeding is merely a matter of allowing sufficient time to elapse. Cattle may offer a little more difficulty in this respect, and this will be dealt with at a later stage.

Whenever possible it is advisable to exclude an animal from feeding for several hours prior to slaughter, but it may be allowed access to water during this period. Furthermore, it should not be killed whilst in an over-heated condition, otherwise a dark colouration of the meat results and its keeping quality is impaired. Allow sufficient time to elapse before slaughtering for the animal to regain a normal temperature after the exertion expended when being yarded. Always carry out the skinning process as speedily as possible whilst the body is still warm, for by doing so the skin is more easily and cleanly removed.

Animals should not be killed when in season if the meat is intended for keeping purposes.

KILLING SHEEP.

To throw a sheep approach from the side, place one leg against the animal's flank, grip its nose with one hand, and bend the head backwards and upwards on the opposite side. The

KILLING AND DRESSING OPERATIONS

Holding sheep for killing.

Act of killing.

Cutting right cheek.

Both cheeks cut.

Removing tongue.

Foreleg skin removed.

Opening up forequarter.

Forequarter opened.

Shank removed.

process is easily accomplished in this way with little possibility of bruising. Never grasp the wool, particularly of lambs, for they are very tender skinned and the flesh is easily bruised. Proceed by laying the sheep on its left side, either against the side of a gate or with its belly against a post, so that the animal may be firmly held. Then place the left foot behind the head of the sheep, grip the muzzle securely with the left hand, and bend the head back so that the neck lies exposed across the operator's left leg. If the animal attempts to struggle, drop the right knee down on to its flank. The knife should remain in the sheath while these operations are being carried out, for if it is held in the hand during such times as the sheep is struggling and kicking, there is every possibility of serious consequences arising. One straight, deep cut across the throat should suffice; the pressure of the hand, bearing upon the jaw, breaks the spinal column and completes the operation. Sufficient time is allowed for bleeding, and the carcass is then moved on to the duckboards in readiness for skinning.

Skinning.

Skinning is commenced by opening up the skin down the centre of the jowl, clearing it from both sides of the head, and taking care to leave the ears on the skin. Next the tongue is removed by inserting one finger in the gullet and so lifting the head that each side of the tongue may be cleared with a stroke of the knife. A pull will then free the tongue. Now, facing forward, with the carcass on the left and lying on its back, grip the nearest (right) foreleg firmly between the knees so as to hold the leg out straight. Cut a narrow strip of skin off the front of the leg by cutting upwards towards the knee joint. Enter the point of the knife, held with the blade inverted and at a low angle to avoid cutting the flesh, and run a cut down to the centre of the neck. Free the skin from the lower part of the neck, and then, by gripping the skin firmly with the left hand and using the butt of the knife handle, clean the side of the neck up to the shoulder. It is not necessary to clear very far down over the shoulder at this stage. Continue, by using the blade, to free the inside of the leg, and finalise this stage by cutting off the trotter at the knee.

Step over the sheep and go through exactly the same procedure on the left foreleg, only this time the knife is held in the left hand. It is almost essential, when butchering, to be capable of using the knife in either hand. Work cautiously at first, if not familiar with using the left hand, for otherwise a severe cut can quite easily be inflicted. Before releasing the hold on this leg and cutting off the trotter draw the knife the full length of the windpipe so as to expose the wesand. Hook one finger under this and pull it clear. Then by nicking slightly the flesh near the end of the wesand a knot which will not slip past the nick can be tied. This knot prevents the contents of the paunch from escaping. The trotter is then cut off at the joint.

It will now be found that the skin runs to a point over the brisket. Hold the skin with the left hand; clear at the point and a little on both sides; then, by placing the right foot on the head of the sheep and pulling steadily upwards, the skin should come cleanly off the brisket. Should the flesh start to tear, use the knife. The fist of the right hand can now be used to punch the skin clear, well up and over the belly.

The hind legs have now to be dealt with. Stand on one side of the carcass, facing towards the rear, and hold a hind leg out taut by gripping it between the knees. Proceed in the same manner as for a foreleg, only this time the opening is made down the back of the leg, the cut coming out at one side of the tail. Use the handle of the knife on the outside of the leg and then clear a little on the inside of the shank, near the hock, but omitting the lower end. Cut through the hock joint, leaving the shank on the skin to provide the necessary grip for pulling the skin clear of the hock.

Then step over the carcass and with the knife still in the right hand open up the other leg to the tail. Change the knife over to the left hand and proceed to skin as for the previous leg, but before removing the shank run the blade of the knife, held on the flat, under the skin at the base of the tail. This clears the under side of the tail. Grip the freed skin, clear a little with the knife, and pull upwards and backwards. It may be found necessary to use the knife round the cod or teats. If so, use as sparingly as possible and exercise caution. Once clear at this point the fist can be employed to punch right through to connect up with the clearance previously made over the belly.

The shank of the last hind leg and the head can then be cut off, and the ends of the gambrel inserted under the ham-strings of the hind legs. The sheep is swung on to the tackle by gripping the skin at the brisket, with the left hand, and the gambrel in the right. Once on the tackle open up the skin with a cut down the centre of the belly, and pull it away from the flanks and belly, if these are not already properly cleared. To clear the belly put one hand on the carcass to steady it, grip the skin, and pull it free. The lower portion of the flank being clear, punch free over the ribs, at the same time holding the skin firmly outwards and upwards. The fist should go right through over the shoulder, and by drawing the arm

PROTECT YOUR STACK!

Due to easing of military requirements, limited supplies of "RELAX" Tents, Stack and Rick Covers, Waterproof Clothing, etc., are now available, and are stocked by leading stores in New Zealand.

Order early from the "RELAX" Stockist in your district.

J. J. McCASKEY & SONS

LIMITED.

Manufacturers of "Relax" Brand Canvas Waterproof Goods
WELLINGTON, C.2.

KILLING AND DRESSING OPERATIONS

Skinning foreleg.

Opening neck.

Brisket cleared.

Belly punched.

Opening hind leg.

Breech cleared.

Ready for flanking.

Flank opened.

Severing head.

backwards from that position the shoulder and the outside of the foreleg are cleared. To clear the edge of the skin from the flank to the hock joints maintain the grip on the skin, insert the thumb under it at the bottom, and then run the thumb upwards and out at the leg. A steady pull, with the skin gripped near the shank, and one hand placed against the leg of the sheep, should clear the outside of the leg.

The other side and leg are treated in like manner, and the skinning of the carcass is finalised by clearing round the tail and then exerting a steady pull at the back from the top, downwards and outwards, when the skin should come cleanly away. Should the flesh on the back tend to tear away, use the thumb or fist, but not the knife, to overcome this difficulty.

Dressing Carcass.

The first operation to perform in dressing the carcass is to wash from the flesh all traces of dirt that have been acquired while skinning. Then clear round the anus and make an incision just below the cod or teats. Two fingers of the left hand can be inserted in this opening so as to spread the gap, and then, with the curved point of the knife blade inserted below the hand and between the two fingers, the cut is continued cautiously downwards along the centre line of the belly to the brisket. The knife blade should be held slightly sideways for this stroke to avoid piercing the "paunch."

The next step lies in removing the entrails thus exposed. First pull out the rectum and then grasp the paunch with the left hand whilst the right hand is pushed down at the back, alongside the backbone, until the wesand is felt. If the wesand has been properly freed during the stage when the forelegs were being skinned, it will pull away cleanly with the entrails, the kidneys alone remaining. Now spread the opening in the carcass by placing the left hand against the flap of the right flank and the elbow of the same arm against the other flank. From this position the brisket can be easily cut down and the diaphragm—the partition which separates the stomach cavity from that containing the heart and lungs—is removed by running the knife round the edges. The heart and lungs, etc., can now be drawn away, the hand being pushed down against the spine to effect this clearance. Finalise the operation by drawing the blade right down the neck to clear the windpipe and sever this at the throat. The carcass should then be thoroughly washed, and finally wiped as dry as possible with a clean cloth. It is then left until the flesh has set before being cut up. The time taken for setting will vary, and for this reason it is usual to kill and dress an animal during the late afternoon, and then hang the carcass in a cool, dry place until the following morning. If considered desirable, the carcass may be wrapped in a loose muslin or cheesecloth bag overnight.

Disposing of Offal.

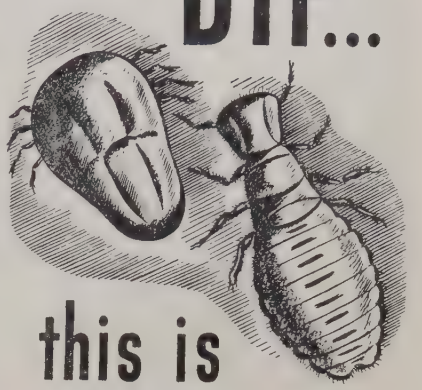
It has been determined that the prevalence of hydatids in this country is very largely due to the common practice on many farms of feeding raw offal to dogs. Only through the dog can the complete life cycle of hydatids be accomplished, and this makes it imperative that under no circumstances should dogs be allowed access to the offal in its raw state. If it is necessary to utilise offal as dog food, then the material should be boiled before being fed. If it is not required, then it should be destroyed by burying deeply or by burning. If all farmers and drovers were to make sure that their dogs at no time were fed on raw offal, more than half the battle in the elimination of hydatids from this country would be won.

KILLING FOR BEEF.

The usual method of killing beef employed on the farm calls for the use of a rifle or shotgun. When yarded the beast is manoeuvred into a position convenient to the hoisting tackle and dropped by a bullet to the centre of the forehead. A successful shot will drop the animal in its tracks, but even so there is always the possibility that the beast has been only stunned. For this reason the animal should be pithed immediately it falls. To do this a 4in. cut is made across the back of the head, about 1½in.-2in. behind the base of the horns. This incision exposes an opening in the base of the skull through which the point of the knife can be driven to sever the spinal cord. If this operation is successfully performed, the whole of the animal's body will quiver as the knife is entered.

The "sticking" process can then be proceeded to without any fear of the beast attempting to rise while this is in progress. When sticking the animal a 12in. cut is made through the skin along the under side of the neck, and well back towards the dewlap. The depth of this cut is continued through the flesh until the windpipe can be felt, the left hand being used to hold the cut open by gripping it at the top. The knife is driven in well back along the windpipe and a backward cut is made as the blade is being withdrawn. If the blood does not flow freely, enter the knife again, this time forcing it a little further along the windpipe and holding the cut wide open. To obtain thorough bleeding it may be necessary to pump the blood out. This can be done by rocking the body of the animal backwards and forwards, a procedure that is best accomplished by alternately pressing down on to the flank with the heel of the boot and lifting the rump by the tail.

This is why you DIP...



this is why you need VIPER POWDER DIP

Viper kills lice, ticks or keds with absolute certainty.

But Viper's killing power is enhanced by the fact that it is particularly finely ground . . . mixes well with cold water . . . and is thus *thoroughly distributed* through the fleece. Well-dipped sheep fatten quicker and produce a heavier clip.

V.3

Branches and Agents Everywhere.

OSMOND & SONS (N.Z.) LTD.
P.O. BOX 460, WELLINGTON.

KILLING AND DRESSING OPERATIONS

Gambrel in position.

Opening up belly.

Clearing hind leg.

Thumbing hind leg.

Anus removed.

Tail cleared.

Punching forequarter.

Skinning back and neck.

Pulling off back.

Bleeding completed, the carcass is then pulled under the hoisting tackle and set up ready for skinning. With the aid of an assistant the carcass can be rolled on to its back, and is balanced in that position by pulling the head around to one side and placing a "pritch" on the other. The pritch consists of a stout stick, pointed at both ends, about 3ft. long, one end of which is placed under the foreleg, behind and below the shoulder, and the other end on to the floor. The carcass is then held in a position ready for skinning.

Skinning

Skinning is commenced by the removal of one foreleg at the knee. Press down on the hoof with the left hand so as to expose the back of the knee, and with the point of the knife locate the lower of the two joints that are situated closely together about the centre of the knee joint. Completely remove the lower portion of the leg at this bottom joint. The hind leg on the same side is next dealt with. The joint in the hock may be a little more difficult to find, but by again using the point of the knife it can be more easily found from the outside than the front of the hock. Cut through at the joint, but leave the shank on the skin. Treat the other fore and hind legs, respectively, in a similar manner.

The head is then straightened out, the knife inserted under the hide, in the cut previously made for the purpose of sticking, and the cut continued along the centre line throughout the length of the lower jaw. Both sides of the head are skinned down to the level of the eye on either side, the skinning of the forehead and nose being omitted, and cuts are made from the muzzle to the base of each horn. The head is then turned back to the original position on the side opposite to that held by the pritch.

Working from the side opposite to that supported by the pritch, make a 4in. slit along the centre of the belly from a point near the pizzle, thus allowing the air to enter and inflate the flanks. Complete the opening up of the skin on the neck by inserting the knife at the rear of the cut made when sticking and running it back to the point of the brisket. Now work from behind the foreleg, cutting down the centre of the brisket, after which the point of the knife is again inserted under the hide and the cut continued from the brisket, along the centre of the belly, to the tail.

Open up down the under side of the foreleg from the knee to the point of the brisket, and skin down over the shoulder and neck almost to ground level. Starting again at the point of the brisket skin back off the brisket and along the belly to the flank. The hind leg is then opened up on the inside from the hock to the centre point between the legs, and the hide removed back over the cod and leg to the flank. Skin down over the rump, but do not trouble to skin the buttock up to the hock.

The "siding down" operation is next performed. Clear the skin just over and along the edge of the flank, grip it firmly in the left hand at this point, and hold the skin outwards and upwards as tautly as possible. Hold the knife firmly in the right hand, and make a series of long down and forward curving strokes until the shoulder is reached. The hide must be kept taut and the blade kept closely pressed against it throughout this series of cuts, and care has to be exercised to avoid damaging both flesh and skin. At this stage the skin is left on the outside of the foreleg to prevent the side of the beast from getting dirty when the carcass is being hoisted.

Having finished as much of the skinning on one side as is necessary at this stage, a change-over is then made by swinging the head round and shifting the pritch to the opposite side. The skinning of the fore and hind legs, neck, brisket, belly, and the "siding down" of the other side are proceeded with in the same order and manner as for the previous side. The ground operations being completed on this other side, the head can then be cut off. To do this pull the head round straight in line with the body, press down on the underside of the muzzle with the left hand, and by using the pith cut as a guide no difficulty should be found in severing the head from the neck. Saw through the brisket and aitch bone and strip the caul fat, from which suet is derived, off the paunch. The carcass is now ready for hoisting on to the tackle.

The bar used should be of hardwood, strong enough to take the whole weight of the carcass safely, and sufficiently long to spread the hind legs well apart. Two iron pins about ½in. thick inserted in holes near the ends of the bar will maintain the spread. A strong loop, to which the hook on the lower block is attached, is needed in the centre of the bar. A double strand of No. 8 fencing wire, securely fastened round the bar, proves quite serviceable.

The carcass is first hoisted until the rump is 3ft. clear of the floor, and with it securely held in this position the skin is cleared round the butt of the tail. The tail is gripped near the end and by inserting the knife under the skin and running it upwards a strip 1in. wide is cut off from tip to butt. The tail is cut into at the base, a hook inserted, and the tail pulled free. The shank of one hind leg which has been purposely left on the hide is now grasped firmly in both hands, and by means of several strong jerks downwards and outwards the skin is pulled clear of the buttocks. The other hind leg is treated in similar fashion, and when finished both shanks are cut off the hide. The hide is stripped down from the back as further hoisting occurs. While the hoisting is in progress the body of the beast will lie over on one side, and it is as well to spread the skin out on that side to prevent the flesh from becoming dirty.

Dressing Carcass.

It is as well to commence the washing down of the carcass after the hide has been stripped from the buttocks and before the rump has been elevated to an inconvenient height. The cleaning can then be continued as the carcass is hoisted, step by step. The cutting down can also be started at the same stage, but it is better to leave this until after the flesh has had time to set, for by doing so a cleaner finish can be obtained.

When the body is hoisted to a position in which the neck is just about clear of the floor the paunch will start to come clear. This can be forcibly cleared by driving the knee down on to it. The diaphragm is then removed by running the knife round the edges, and by running the blade down behind the heart and lungs these are also freed. The carcass is then hoisted clear of the floor, all traces of blood and dirt are washed off, and a final rub over given with a clean, dry cloth.

Did You Know T'OTHER from WHICH at Docking Time ?

IF NOT YOU NEED

FARM-ACY EARTAGS

These tags are the perfect identification for stud sheep. Will not rust, corrode, infect the ear, wear out or pull out. Made of hard bronze.

CHEAPEST and BEST

Send for Sample

THE FARM-ACY

Stock Identification Specialists.

(A. E. Foster, Propr.)

23 Morris St., Palmerston North.
PHONE 6081.

Ask for Free Booklet.

KILLING AND DRESSING OPERATIONS

Clearing forequarter.

Skinning completed.

Opening abdomen.

Removing viscera.

Viscera removed.

Opening brisket.

Liver removed.

Wiping carcass.

Dressing completed.

When cutting down the carcass a chopper is first used to obtain a start, and a saw is employed to continue the cutting down through the centre of the backbone to the shoulder. From this point the chopper is again utilised to cut down through the neck, the end of which is left joined so as to balance the carcass while it is still on the tackle.

KILLING PIGS.

The scalding which a pig carcass must undergo in the process of dehairing necessitates some preparatory details prior to the actual slaughtering of the animal. The provision of an adequate supply of boiling water must be seen to. Sufficient scalding water will be required to ensure that the carcass is completely submerged when placed in the trough. The trough should be placed convenient to the tackle, which will be needed to facilitate the handling of a large carcass from trough to table. A low table or strong trestle bench, 2ft. to 2ft. 3in. high, 7ft. to 8ft. long, and 3ft. wide, should be erected alongside the trough. A reliable thermometer, to test the temperature of the scalding trough, is a useful acquisition, though not absolutely essential. A proper scud to be used for dehairing will also facilitate the work, but failing this there are several other appliances, such as an old saucepan lid, a tobacco tin, or a knife, provided the blade is not too sharp, that will serve the purpose quite well.

The pig, as with cattle, is stunned prior to being stuck. A small rifle, an axe, or a solid hammer may be used for this purpose. When the animal drops the operator should quickly roll it on to its right side, holding its left foreleg back with his left leg, and make a small incision in the skin near the centre of the throat. Insert the point of a straight-bladed knife in this cut, and drive it straight back between the shoulders. Make a slight backward cut as the knife is withdrawn, taking care to avoid striking the backbone.

Scalding Pigs.

While the pig is bleeding attend to the water in the scalding trough. The most efficient temperature for the scald is usually 140 degrees Fahrenheit, but slight variation may be advisable, according to circumstances. Rough- or naturally coarse-haired breeds of pigs are, in general, easy to scald at this temperature, whereas the fine-haired breeds, e.g., the Tamworth, quite often prove a little more difficult. A slightly higher temperature, 142 degrees Fahrenheit, may be required to obtain an efficient scald in the latter instance. The correct temperature can best be gauged by using an accurate thermometer, though a fairly reliable method that may be employed in the absence of a thermometer is as follows:—When making up the water in the trough add boiling and cold water in the proportion of 3 boiling to 1 of cold, and then test by adding a few drops of blood. Should the colour of the blood remain unchanged, it indicates that the temperature is too low. A change in colour of the blood from red to whitish indicates when a sufficiently high temperature has been reached. The water should always be thoroughly stirred just prior to the test being applied.

To obtain a good scald it is advisable to keep the carcass on the move while it is in the trough. This is conveniently accomplished by utilising approximately 15ft. of ½in. rope. Double the rope and lay it across the centre of the trough, with the strands about 2ft. apart, before dropping the pig in. The latter operation can be quickly and safely carried out with the aid of the tackle, the carcass being hoisted, after a gambrel has been inserted under the tendons just below the hocks, and carefully lowered into the trough. Then remove the gambrel, take hold of the rope on both sides, and by pulling first on one side, and then on the other, the pig can be rolled over and over in the water, providing the carcass is not too large and the size of the trough permits. The use of the rope not only facilitates the work of getting a good, even scald, but also gives some indication of just when the scald is nearly sufficient, the hair coming off with the working of the rope when this stage is reached. However, the hair on the head should be tested before the pig is finally removed from the trough to the scraping table, for when it comes off fairly easily at this point the scald is correct. Normally, about four minutes in the water should suffice, but it may be found necessary to allow a little extra time or to add more hot water before a satisfactory scald is obtained. When adding boiling water to the trough take care not to pour it directly on to the carcass, and if any difficulty is experienced in completely submerging the carcass, place a couple of clean sacks over it and pour hot water on these.

With the scald satisfactory, hoist the pig out on to the scraping table, and quickly proceed to scape off the hair, paying particular attention to the head, where most difficulty will be met. Keeping the carcass wet, by pouring hot water over it, will facilitate and speed the work of dehairing. Once the bulk of the hair has been removed the horny shells or covering of the hooves are pulled off by hooking with a meat or bale hook, and the carcass again hoisted on the tackle. In this position it is first washed down, and then any hair that remains is shaved off with a sharp knife, the carcass being kept wet with warm water during the shaving process, and care being exercised to avoid cutting the skin. Finalise the dehairing by washing down, either with a hose or by throwing a bucket or two of cold water over the carcass.

Dressing Carcass.

The first step taken in the dressing of a pig carcass is to clear round the anus, and this is done by driving a straight-bladed knife down, first on one side and then on the other; then grip the side of one cut, clear right round the anus, and pull it upwards to ascertain if it is properly cleared. This work is performed from behind the carcass. Next, turn the carcass round, place the left hand on the hind leg to steady it, and run the knife straight down over the centre of the belly, starting from a point at the crutch and just in line with the thin flanks, and finishing at the brisket. This cut gives a guiding line, and should not be deep. Make a small incision at the top of this line, insert two fingers of the left hand to spread the gap, and, with the point of the knife, followed down by the fingers as when opening up a sheep carcass,

SEEING THINGS THROUGH

Railways' Great Responsibility

All New Zealand is united in producing in ever-increasing quantities and delivering with the utmost speed, equipment, materials and supplies vital to the Allied Cause. Industrial plants, mills, farms, factories—all are being called upon to shoulder unprecedented responsibilities. By far the greatest burden of wartime industry falls upon Transportation. Today, Railways are the backbone of Transportation in this country and anything which impedes them weakens our whole war effort. Unnecessary train travel hinders essential journeys; misuse of railway wagons will complicate freight schedules.

The More You Help, the Sooner We Win

open up along the line to the brisket. Continue the line of this cut down over the brisket, and cut in to the bone. A saw is used to cut down the brisket. The carcass is steadied by holding the foreleg, and the saw cut made by strokes in an upward and downward direction. The opening cut is finally continued from the brisket along the centre of the neck to the head. The entrails can then be withdrawn, the diaphragm cut, the heart and lungs removed, and the windpipe and gullet severed at the base of the tongue. Finalise the dressing by thoroughly washing down the carcass, and then hang it in a cool dry place to set.

A NEW INDUSTRY GROWS UP!

Marathon Rubber Footwear Ltd., on November 30th, 1944, completed the manufacture of their first 100,000 pairs of Gumboots.

Marathon Knee Gumboots are giving complete protection and real service to Farmers and many other users from one end of New Zealand to the other.

The only complaint about Marathon Gumboots has been that there are not enough of them. The Factory building is at present being extended; new machinery is ready for installation; and provided that rubber is available, the 1945 output can be doubled.

MARATHON RUBBER FOOTWEAR LTD.
Woolston, Canterbury.

Cutting Down Carcass.

A pig carcass should always be cut down with a saw, but before commencing to use this cut off the head and make a guiding cut from the tail, down the centre line of the back, to the neck. A straight saw cut is then made down through the centre of the backbone, this being most efficiently done by working from in front of the carcass.

BEEF CUTS.

Forequarters:

Shin, used chiefly for soup and potted meats.

Clod, used chiefly for soup and potted meats.

Bolar, used chiefly for soup, frying, and stewing, or roasting joint free from fat.

Blade, used chiefly for soup, frying, and stewing, especially for puddings and pies.

Sticking, used chiefly for gravy beef and beef tea.

Chuck (1st and 2nd ribs), used chiefly for stewing or pot roast free from fat.

Set Ribs, consisting of:

Prime, used chiefly for prime roasting joints.

8th, 9th, 10th, 11th, with or without bone.

Gristle (6th and 7th), roasting joints with or without bone.

Back (3rd, 4th, 5th), cheap roasting joints free from fat.

Brisket, consisting of:

Bosom end, corned or fresh for boiling.

Middle cut, corned or fresh for boiling.

Navel end, corned or fresh for boiling.

Thin skirt, tender frying and grilling steak.

Hindquarters: (a) Rump and loin; (b) butt.

(a) **Rump, consisting of:**

Rump steak, used chiefly for choice frying and grilling.

Rump steak, used chiefly for selvedge fat.

Fillet or undercut, used chiefly for choice frying and grilling; extra tender.

Loin:

Wing rib (12th and 13th), choice roasting joint free from surplus fat.

Middle cut loin, roasting joint.

Chump (1st cut), with portion of fillet, choice roasting joint.

(b) **Butt:**

Thick flank, used chiefly for frying and stewing.

Topside, used chiefly for grilling and roasting, selvedge fat.

Silverside, used chiefly for corning, prime boiling free from surplus fat.

Femur or marrow bone, for entree dish.

Leg of beef, used chiefly for soup and potted meat.

Thick skirt used chiefly for puddings and pies.

MUTTON CUTS.

Forequarter, used chiefly for roasting.

Forequarter chops, used chiefly for stewing.

Shank, used chiefly for broth.

Breast, used chiefly for pie and broth.

Best end of neck, used chiefly for roasting.

Scrag end of neck, used chiefly for stewing.

Hindquarters:

Leg, used chiefly for roasting or boiling.

Loin, used chiefly for roasting.

Rib end, used chiefly for cutlets, grilling, and frying.

Flap, used chiefly for stewing.

Sheep's head, used chiefly for soups.

Trotters, used chiefly for stewing for invalids.

PORK CUTS.

Leg, used chiefly for roasting or boiling, corned or fresh.

Loin, used chiefly for roasting joints and chops for frying.

Belly, used chiefly for corning and boiling, streaked with fat and lean.

Cheek, used chiefly for corning and boiling.

SUNDRIES AND ENTREES.

Ox cheek, used chiefly for splendid entree, can be braised, boiled, stewed. Required to be well cooked.

Ox tail, used chiefly for soups and entrees.

Kidneys, used chiefly for pies, stews, and grills.

Tongues, used chiefly for corned, boiling, and pressing.

Heart, used chiefly for roasting.

Cow heel, used chiefly for boiling and potted meat.

Tripe, used chiefly for frying and stewing.

Sweetbread (thymus gland), used chiefly for frying.

Brains, used chiefly for frying and stewing.

Preservation of Meat.

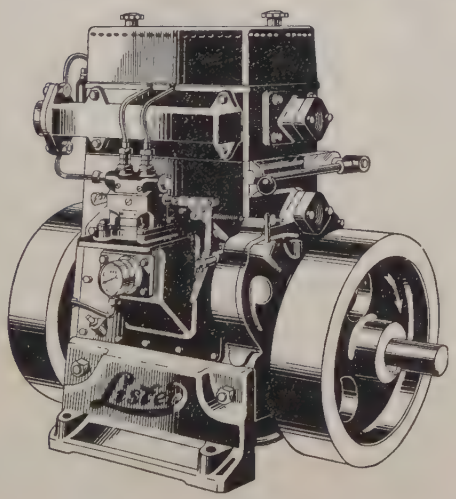
When a carcass of meat is killed there is often more meat on hand than can be comfortably used. However, if part of the meat is preserved, the time for using is extended over a greater period, and so the food can be more economically used.

Cold Pickle: In New Zealand beef or mutton is preserved by pickling in a cold brine. The meat is placed in a tub of brine and removed as required. This method is quite satisfactory for a butcher, as the continued flow of customers prevents the meat remaining too long in the brine and consequently becoming too salty, but for farmers, using only small quantities, the flavour is apt to become too strong and the meat may become unpalatable if left in the brine for a long period.

A suitable brine for this type of pickling is made with 5 gallons of water, 10lb. of coarse salt, and ¼lb. of saltpetre. This is sufficient for 100lb. of meat. The brine is made two or three days before use, and the scum which forms on the surface skimmed off occasionally. The meat should be left in the brine at least half a day, or the rich colour of the meat will not have time to develop, and meat will present a weak and sickly appearance.

Hot Pickle: For the housewife the method used in meatworks could be easily adopted. The beef or mutton is cooked for 30 to 60 minutes in boiling water and then pickled in a brine for about six hours. The meat is then removed, packed into preserving jars or in receptacles in which it is to be stored, which after cooking are made airtight. Meat preserved by this

AT LAST! After years of patient waiting, supplies of...



LISTER DIESEL ENGINES

are due to ARRIVE!

Place your Order with your Local Agent or Milking Machine Company NOW for delivery on arrival.

LEVIN & Co. Ltd. DISTRIBUTORS FOR NEW ZEALAND.

CUSTOMHOUSE QUAY, WELLINGTON. P.O. Box, 1496. 'Phone 40-150

method will keep for long periods and if required to be served hot has only to be heated. The broth which is left after the first boiling is used in factories to make meat extract, and will make very good soup.

American Dry Pickle: With this method the meat is pickled in a 20 per cent. salt brine, prepared with sugar and saltpetre, for about 24 hours. The meat is then removed, dried, sprinkled with borax, and pressed. The amount of borax used is about 1-2 per cent. of the weight of the meat.

Curing Bacon and Ham: Before starting to cure bacon it is essential for the meat to be properly chilled. In New Zealand this is practically impossible in summer, but can be successfully accomplished during the winter months. In curing, first remove the shoulder and aitch bones and sprinkle with a mixture of 10lb. of salt, 1-1½lb. of saltpetre, and 1-1½lb of brown sugar. The mixture must be well rubbed into the back of the side, but the meaty side will absorb the salt without rubbing. Leave for three to four days and repeat the salting, and after a week salt again. If a number of sides are being salted at the same time, make a stack of them and each time they are resalted reverse the position of the sides, the side which was on top of the stack at the first salting being the bottom side when salted the second time.

When curing hams or if more flavour is required, spices and seasoning are added to the cure. The usual ingredients are cinnamon, nutmeg, thyme, and cloves.

After curing pickle the sides in a brine of salt, saltpetre, and sugar, for two days, remove from the brine, and smoke.

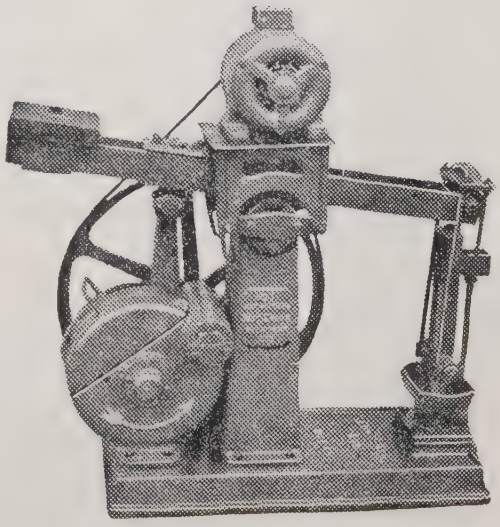
Composition of brine used for bacon: Sixteen parts of salt are mixed with one half part of saltpetre and 1½ to 2 parts of sugar. A little over 1lb. of this mixture is used to every 10lb. of meat. The sugar is added to the meat on account of its marked action in preventing putrefaction. Too much sugar may cause a slime to form on top of the brine, which, however, is said to have no ill effects on the pickled material.

Many New Zealand timbers are used for smoking purposes, a suitable smoke being procured from white pine, sawdust, and shavings. Resinous timbers should not be used on account of the fumes tainting the meat.

MAKE CERTAIN OF A GOOD WATER SUPPLY—

Install a MacEwans' Pump

Water is life to your farm, for a plentiful supply under pressure to every part of the farm reduces labour and helps increase production. MacEwans' pumps have proved themselves by years of service to be the finest that years of experience and skill can produce. Thoroughly reliable . . . efficient . . . and very economical in upkeep . . . make a MacEwans' Pump a life-time investment. Illustrated above is the new improved type of Beam No. 1 Deep Well Gearing.



Ill.—Beam No. 1 Deep Well Gearing.

FREE ADVICE ON ALL YOUR PUMP PROBLEMS

MacEwans LIMITED

Head Office: Penrose, AUCKLAND; and at Ward St., HAMILTON. Agents at Pukekohe, Te Puke, Thames, Tauranga, and Whangarei. Messrs. J. B. MacEwan & Co., Ltd., Wellington, Palmerston North, Carterton, New Plymouth, Stratford, Hawera, Opunake and Ohura. Agents: Messrs. G. W. Parker & Co. Ltd., BLENHEIM; Messrs. Reid & Gray Ltd., DUNEDIN, BALCLUTHA, GORE and INVERCARGILL.

POST COUPON NOW!

I am interested in a MacEwan Pump Outfit. Please send me full details and illustrated literature.

NAME .....

ADDRESS .....

.....

..... J.A. 2/45.

QUALITY IN LUCERNE HAY

PROVIDED the maximum of leaf is retained there is no finer hay than lucerne hay, but lose the leaf and the resultant fodder is little better than poor straw. Unfortunately, much lucerne hay saved in this country comes within the latter classification and while it is admitted that weather plays a big part in hay quality generally, there is much that can be done by the farmer to ensure good quality. In some districts there is a tendency to delay cutting too long, with the result that stems become tough, the lower leaves on the lucerne plant drop to the ground, and the upper leaves tend to become overmature. Care must be exercised to see that the cutting of the lucerne crop for hay is carried out at the correct stage, for quality is actually more important than quantity with this crop.

On the other hand, the constant cutting of the crop at an immature stage tends to reduce the life of the stand. The new growth at the base of the plant can be taken as an indication of the stage at which lucerne should be cut. In handling the crop the material should not be left in the swathe too long, but should be windrowed or cocked. Lucerne hay is so valuable that a little extra time and expense in handling the crop is warranted.

Meat Inspection for Farmers

Farmers who slaughter stock for their own or their neighbours' consumption, when selecting a suitable cattle beast, should be sure to look for one which is apparently in good health and not dying from disease or poverty. You and your family will be eating it, and only the best should be good enough.

— By —
P. HAUGH, M.R.C.V.S.,
Veterinarian,
Wellington.

SELECT a young animal which has been going ahead all the time, not one which is definitely going back. Have a good look around the beast you have finally selected; watch him in the paddock or yard; look at his breathing whilst at rest, and also when being driven along; look at his general carriage, and see if his eye is bright, his breathing normal, and that he walks evenly, without lameness; look for swelling or enlargements in various parts of the body, such as the upper jaw, lower jaw, in between the branches of the lower jaw, point of shoulder, and in the flank. Allow the animal to remain quietly in the slaughter-yard for 24 hours without food, but with a plentiful supply of clean, fresh water. The same selection of a healthy animal should be made when a sheep is to be killed.

FARM-KILLED MUTTON.

After slaughtering and dressing a sheep look inside the chest for pleurisy and pneumonia.

Pleurisy

Inflammation of the membrane lining the chest wall may be either wet or dry. Dry pleurisy will show a roughening of the chest wall, slight or extensive, with a dull greyish fibrous deposit, to which portions of the lung may be adhering. In wet pleurisy there will be no adhesion of lung to the wall. When pleurisy is in an acute stage the carcass will be fevered, high coloured, and will not set when cold. In this state it should be condemned for human consumption, but would do for dogs or pigs when boiled.

Sometimes, although very rarely, septic pleurisy may be found. In this case there will be a certain amount of pus or fluid in the chest, and if this is so, the carcass should be destroyed. When pleurisy is dry and localised to a small portion of the chest wall it may be wiped off with a clean cloth and the carcass used for food.

Pneumonia

Inflammation of the lungs is not as common as pleurisy, which may follow it. If acute, the lungs are inflamed, may become liver-like in consistency, and will not float in water. The carcass will be fevered, and should be destroyed. In chronic cases part of the lungs may be collapsed and not functioning, but the carcass should be fit for food. In a **fevered carcass** the flesh is usually darker in colour than normal, with small blood spots scattered throughout its substance. In severe cases it may feel soapy to the touch, and be very dark in colour. It will not set when cold. Such meat should never be used for human consumption. It is better to destroy the carcass by burning or burying deeply with lime, as in all probability the cause of the condition is unknown to you.

Next inspect the lymphatic glands in the various parts of the body, in the liver, intestines, and lungs. These glands are oval, round, or elongated, according to their situation, and are often described as "kernels." The prescapular gland at the point of the shoulder can be felt as a hardish lump, which moves under the finger. It is situated about a hand's breadth under and behind the point of the shoulder when the carcass is hanging up. This gland should be incised if it feels enlarged. If it contains pus either in liquid or cheesy condition, it should be cut out from the carcass and the carcass used for food.

The precrural gland in the fat of the flank should be felt for and incised; also the glands in the cod fat or behind the udder. The disease found in these glands in the sheep is known as lymphadenitis. It is not dangerous to human health, but is objectionable. When more than three glands are affected the carcass should not be used for human food, but is quite suitable for animal use after cooking.

The internal organs should next be examined. Parasitic infection should be well looked for. Examine the lungs, heart, liver, kidneys, spleen, and the inside of the carcass for the presence of hydatids. These are seen in the body cavities as bladders of watery fluid hanging from the walls. In the organs they may be either bladders of watery fluid or limey masses. If the muscles show these bladders or limey masses, the whole carcass should be burnt or buried with lime. No animal should be allowed to eat any affected portion which has not been first thoroughly boiled.

Inspect the liver carefully for the presence of hydatids and other parasites, such as liver flukes. These latter are small, leaf-like, flattened parasites, which in time destroy the liver and cause death of the sheep, but they first increase the flow of bile and thus the rate of fattening of the host. All affected livers should be burnt.

Peritonitis

Inflammation of the serous membrane lining of the abdomen may be acute or chronic, widespread or localised. In acute cases the carcass should be condemned, but in chronic localised peritonitis the affected part should be cut away and the rest used for food.

CATTLE.

In cattle the principal diseases to be looked for are tuberculosis, actinomycosis, fever, pleurisy, septic conditions of the udder and uterus, and parasites.

Tuberculosis

Tubercular infection is not always shown outwardly. Occasionally cattle seemingly in first-class order are condemned at abattoirs and freezing works for a generalised tuberculous condition. In such a case tuberculous lesions are found in the body, lymphatic glands, internal organs, on the pleura, and also on the peritoneum. The affected glands may be enlarged and on incision may show cheesy pus, or they may be in a limey condition, cutting quite gritty under the knife. Masses of grape-like bunches may be found on the abdominal and thoracic walls. This condition can usually be seen when the abdomen is first opened during skinning operations, and the carcass should be burnt or buried with lime as quickly as possible, preferably without removing the internal organs.

SPEEDWAY
STERILISER
STEAM and BOILING water
BURNS OIL OR WOOD
Send for Ill. Catalogue to Speedway Steam Products Ltd., 51 Albert St., Auck.

More often the disease is localised. It may be found in the lymphatic glands at the base of the tongue or under the jaw, when head and tongue should be condemned, in the glands of the bowels—mesenteric glands—when the bowels should be destroyed, in one or more of the internal organs, such as lungs, liver, spleen, or kidneys, which should be destroyed, or in one or more of the body glands mentioned before, when the appropriate quarter should be condemned.

Actinomycosis

Lumpy jaw, or wooden tongue, is a disease affecting the lower or upper jaw or the tongue. It is, as its name implies, a swelling on the jaw or a hardening of the tongue. In the latter case there is almost constant dripping of saliva, and the animal may be unable to eat. In both cases the head and tongue should be destroyed. An animal affected with the disease would not be selected for slaughter on the farm, but if in good condition might be slaughtered under inspection at an abattoir.

The presence of hydatids or other parasites is as described in sheep, and the judgment should be the same.

Septic Metritis

Inflammation of the uterus may be acute or chronic. It may be accompanied by a foetid discharge, in which case the carcass should be condemned and destroyed. In acute cases the carcass would be fevered, which would entail condemnation. If the condition is slight, the carcass may be used when the affected part has been removed.

Mammitis

Inflammation of the udder is shown by the presence of inflammation in one or more quarters, and, if acute, by the signs of fever. This again should entail condemnation. If the condition is chronic, the carcass may be used after removal of the udder.

Pleurisy and peritonitis may be dealt with as in sheep.

Cancer of the eye, or epithelioma, in Hereford cattle is shown in the eye. In the inner corner of the eye a small growth starts. It is accompanied by weeping from the eye. As time goes on the growth enlarges, until in time the whole eye and part of the eye socket may become affected.

PIGS.

Diseases to be looked for in the pig are tuberculosis, pleurisy, faulty castration, and parasites.

Tuberculosis will be shown as in cattle, in the same sites, and may be treated in the same way. Pleurisy can also be dealt with as in cattle and sheep.

In faulty castration there may be abscesses of varying sizes at the seat of operation. This may be shown firstly by a swelling, which on incision will show the presence of pus, or it may be shown merely by the thickening of the skin and underlying tissues, when excision is all that is required. If the abscess is of a large size and the animal is fevered, condemnation should follow.

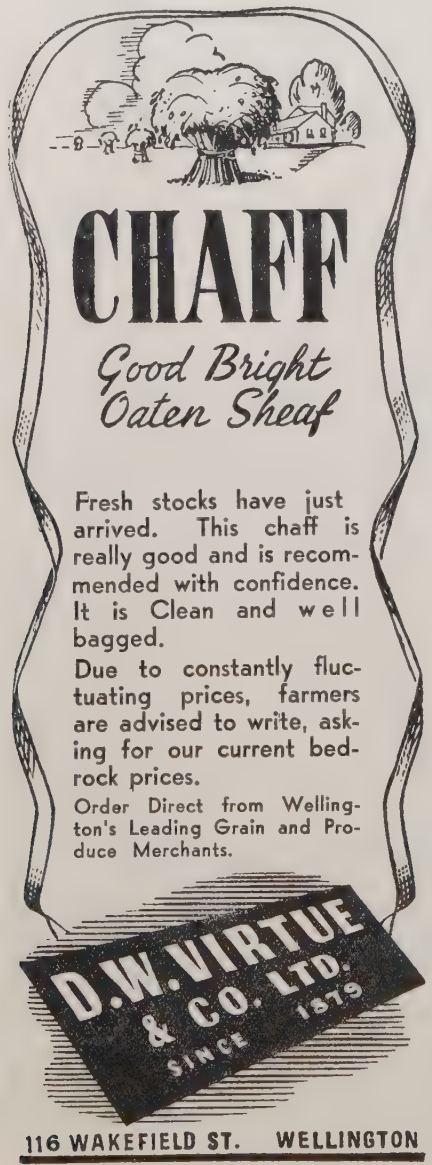
Hydatids are again the principal parasites to be found. Pork should never be eaten raw or under-cooked, as in sausages and other small goods. Many more cases of trichinosis have been found in England during this war than were ever found before. The disease is caused by the *Trichina spiralis*, and affects the muscles of the whole body. Man becomes affected by eating raw or under-done affected pork, whilst pigs become affected by eating infected flesh or excreta of other pigs, or by eating infected rats and mice. Fortunately this parasite has not been shown to be present in New Zealand.

In conclusion I would urge every farmer or stock-breeder to follow some draft of his stock to the freezing works or abattoir, where he can watch the process of slaughtering, inspecting, and grading of his own stock. Many farmers have the idea that meat inspectors work under the orders of the freezing company and take their instructions as to the disposal of the stock. This is totally wrong. The inspecting staff is under the control of the Department of Agriculture, and take all instructions from that Department. In each works or abattoir there is a supervising meat inspector, who is under the control of a veterinarian of the Department.

Every farmer should make a point of getting in touch with the supervising veterinarian or meat inspector at the works concerned. Either of these officers will be only too pleased to explain anything or unravel any knotty point regarding meat inspection. He will show you the situation of the various lymphatic glands, and will willingly answer any questions to the best of his ability.

Although these notes have been prepared with a view to assisting the farmer to recognise certain diseased conditions in stock killed on the farm, it may be stated that on the average sheep station, if a careful selection of the animal is made before slaughter, very little, if any, disease, apart from hydatid cysts in the liver and lungs, is ever encountered.

When a normal healthy-looking animal is selected and thoroughly rested in the yard before slaughter, with recognised slaughtering, bleeding, dressing, and hanging of the carcass, no more suitable meat can be produced anywhere. In fact, it is generally admitted that farm-killed mutton is superior in many ways to that produced at abattoirs. The fatigue caused by travel of stock to abattoirs and works for slaughter is stated to be a factor against the production of the quality meat produced on the farm.


CHAFF
Good Bright Oaten Sheaf
Fresh stocks have just arrived. This chaff is really good and is recommended with confidence. It is Clean and well bagged.
Due to constantly fluctuating prices, farmers are advised to write, asking for our current bedrock prices.
Order Direct from Wellington's Leading Grain and Produce Merchants.
D.W. VIRTUE & CO. LTD.
SINCE 1879
116 WAKEFIELD ST. WELLINGTON

Care of Milking Machine Rubberware

FARMERS are advised to continue to take the greatest care of their milking machine rubberware. Supplies of rubber are still short, and in the United States some inflations are now being made of synthetic material.

FARMING IN NEW ZEALAND

Pasture Management

PASTURE management is one of the most complicated of all farming operations. It is concerned with many aspects such as seedbed preparation, manuring, and weed control, all of which are in turn concerned with the provision of the greatest possible quantity of useful feed that can be produced under the particular conditions existing.

By

S. H. SAXBY,

Instructor in Agriculture, Wellington.

INFLUENCE OF MANAGEMENT ON TYPE OF PASTURE.

A pasture is a collection of a vast number of individual plants, all of which are struggling for an existence under the many and varied conditions under which they are growing. Plants, and pasture plants in particular, are responsive individuals, responsive to external influences such as changes in temperature, moisture, fertility, and competition from other plants. They are also very responsive to the effects of the various grazing animals.

It is with this fact that the farmer either consciously or unconsciously is continually concerned in the establishment and the maintenance of his pastures. The responsive nature of plants in their continual struggle for existence can be taken advantage of by the farmer in his efforts to mould and maintain his pastures in the condition most suited to his particular requirements. It should not be forgotten, however, that the same responsive nature of plants is responsible for many of our weed plants being so troublesome. Consequently there is a constant endeavour on the farmer's part to encourage the useful plants and to discourage or eliminate the undesirable ones. Different species of plants very often react differently to the same conditions or treatment. A knowledge of the reaction of the various plants to the many conditions of treatment may assist a farmer very considerably in the maintenance of the desired type of pasture in the most suitable condition for his livestock.

One of the simplest and yet most striking effects of management on the type of pasture is that of a well-managed pasture of prairie grass. Provided that the prairie grass is growing on a well-drained, warm, fertile soil, it may be encouraged to last many years as a virtually pure stand, provided that it is never grazed too hard. Under lenient cattle grazing prairie grass will last much longer than it will under close and continuous grazing by cattle. If close-grazing animals, such as sheep or horses, have continued access to it, prairie grass will die out rapidly.

The effect of varying types of management is very frequently noticeable on either side of a fence line, particularly if the fence is a boundary between the two properties. On one side there may be a good, rich, milk-producing pasture, and on the other a poor, starved sward overrun with weeds or undesirable grasses. These differences are seldom, if ever, solely due to the soil itself; they are nearly always due in the main to the way in which the two pastures have been managed with regard to fertility, maintenance, and grazing. These fence line differences are often very striking in hill country. On one side of the fence there may be a pasture infested with bidi-bidi, whereas on the other side the pasture is virtually free. This difference is usually due to the effects of stock manipulation. Close and continuous grazing by sheep, which will not eat the bidi-bidi, allows it to grow and spread rapidly over the closely-cropped grass by means of its runners. Under these conditions the bidi-bidi is able to spread and seed freely. On the other hand, if a similarly-infested pasture is grazed by cattle, the bidi-bidi is slowly but surely reduced, particularly if the pasture is allowed to "get away" periodically. This "getting away" enables the grass to raise the runners above ground level thus stopping them from rooting. The subsequent grazing by cattle damages the runners by both the grazing and the effect of the trampling. In a somewhat similar manner many other weeds may be controlled, even if not entirely eliminated. Ox-eye daisy, ragwort, and docks are almost always associated with cattle grazing alone. If the grazing is changed over to sheep, these plants are gradually reduced—so much as to become of little significance.

On the other hand, close and continuous grazing by sheep may also encourage undesirable plants. Daisies, bidi-bidi, hard fern, pennyroyal, and catsear are all encouraged by sheep grazing. Continuous haying of a pasture has the effect of encouraging tall, shade-enduring plants, and the virtual elimination of the low-growing, light-demanding plants. Consequently a pasture originally consisting of ryegrass, white clover, cocksfoot, and red clover may, under repeated haying, change to dominant cocksfoot, much of the ryegrass and clovers being smothered out. As is the case with prairie grass, pastures may be made to remain dominantly cocksfoot or timothy largely by repeated haying or light grazing by cattle.

On the other hand, the same pasture consisting of ryegrass, white clover, and cocksfoot may be maintained dominantly ryegrass and white clover by close grazing and by an absence of haying. This may be carried still further. If the clover in the sward is weak, it may be encouraged to a very

great extent by hard spring grazing and lenient summer grazing. If, however, the clover is too vigorous, it may be reduced by allowing the grass to come away to its maximum during the spring, and thus partially smother the clover. When the pasture is grazed later the clover is eaten back at the time that it is most vigorous. In some districts where pastures are sometimes repeatedly shut up for seed there is frequently a very marked increase in the amount of annual plants in the sward. Plants such as goose-grass, hairgrass, burr clover, suckling clover, and clustered clover may become so plentiful that the pasture is ruined for seed production. This is due to the fact that much of the seed of the annuals is shed at or about the time the crop is cut for seed. This seed falls on the opened-up sward and germinates rapidly when the autumn rains commence. This tends to perpetuate and increase the quantity of the undesirable and quick-growing annuals. This transition to the dominance of the annual may be offset to a very considerable degree by refraining from shutting the pasture up for seed for several seasons. By grazing continuously and topping when necessary the annuals are unable to seed and increase, and consequently die out to a very large extent.

On the management adopted may depend the type of pasture. In the background are lightly-grazed browntop-covered hills. In the middle distance are closely-grazed, high-fertility pastures. In the foreground is an area dominated by bidi-bidi.

STOCKING AND GRAZING OF PASTURES.

The main value of a pasture is its ability to produce the maximum quantity of useful feed. The work entailed in the production of this feed is very considerably offset, however, if the fullest use of it is not made.

On some types of country, such as rich dairying land, the utilisation of the feed produced can be carried out almost completely. On other types of country, such as large sheep runs with their extensive areas and relatively low concentration of stock, complete utilisation is seldom possible.

The maximum and best utilisation of feed can be secured only when it is possible to transfer and concentrate stock as rapidly as conditions will

NECA
SHEEP DRENCH

is an efficient Treatment for LIVER FLUKE and STOMACH and INTESTINAL WORMS.

NECA DRENCH is a combination of Carbon Tetrachloride with other valuable worm remedies, and with the addition of Tonic Ingredients.

Well known breeders write:—

"Neca is a splendid Drench. Sheep made wonderful improvement after dosing."

"Your drench is very good; I can recommend Neca with confidence."

¼ Gallon, 9/1; ½ Gallon, 15/10; 1 Gallon, 28/4.

COBALTISED N.C.A. WORM DRENCH

is a treatment of proved value for STOMACH, INTESTINAL, TAPE and WIRE WORMS in Sheep and Lambs.

It is a well balanced combination of Copper Sulphate, Nicotine Sulphate, Arsenic and Cobalt, and is a Tonic as well as an efficient Worm Destroyer.

Price 8/7 for 672 lamb doses or 5/2 for 336.

For Efficient & Economical Worm Drenching alternate Neca Sheep Drench & Cobaltised N.C.A.

Neca Products are manufactured from the finest ingredients and under the supervision of skilled Veterinary Chemists.

Obtainable from Farmers' Co-op. Assns., from your merchant, or forwarded freight paid from the manufacturers

TINGEY & HUBBARD, LTD. VETERINARY CHEMISTS, FEILDING.

allow. This fact has led to the gradual establishment of what is known as rotational grazing. Rotational grazing is, however, a very wide term. It may involve anything from highly-concentrated stocking of 10 cattle or more per acre, where the animals are shifted daily, to the high country runs, where the sheep graze on the mountains in the summer and on the low country in the winter. Both of these are rotational grazing in the strictest sense, in that they both aim at the best utilisation of the feed grown, the only difference being one of degree.

As a rule, however, the richer the country is the easier it is to subdivide and concentrate large numbers of stock for short periods. This rotational or on-and-off grazing has many advantages. The most important point is that under this system pasture growth following a spell comes away rapidly and evenly and produces very nutritious and succulent feed. A rapid grazing by a heavy concentration of stock eats the pasture down evenly all over and comparatively little useful feed is wasted. Further, the chances of a paddock becoming fouled are not as great as is the case when a small number of stock are grazing over a long period. The animal excreta, which is a valuable manure, is spread evenly over the whole pasture, with the result that the growth made when the pasture is spelled is both rapid and even, thus leading to better utilisation. By rotational grazing instead of set stocking it is possible to close up a larger area of the farm for hay or silage production, owing to the fact that all instead of only part of the feed is being utilised. The chief objection to rotational grazing is that extra labour is required for the constant shifting of stock.

On practically all farms the object is to produce feed as early as possible in the spring, thus reducing the period over which feeding out is necessary. The use of certified seeds has done much in this respect, as most of the certified strains of grasses and clovers come away earlier in the spring than do the ordinary strains. An additional stimulus to early spring growth may be obtained by the practice of late autumn and winter spelling the best pastures. A good ryegrass pasture that is allowed to go into the winter carrying some growth will come away much more rapidly than will a pasture that is grazed hard all the winter. Heavy winter grazing and consequent poaching of good pastures may result in considerable damage and ingress of undesirable grasses and weeds. Even when a farm is rotationally grazed and half or more shut up for hay or silage, surpluses of feed do accumulate, particularly during a wet summer. It is then often necessary to bring in store cattle to utilise this surplus.

PASTURE TOPDRESSING.

Of all the activities associated with the betterment of pasture production there is little doubt that topdressing has produced the most striking and remunerative results. The benefits obtained from topdressing are essentially those of an increased quantity of nutritious feed, largely through the building up of the soil fertility to such a state that the more highly-productive grasses and clovers are enabled to thrive.

Topdressing, together with the use of persistent and high-producing strains of grasses and clovers, has enabled some country to carry permanent pastures where only short-rotation pastures could be maintained previously. It has made possible the saving of vast quantities of hay and ensilage, thus intensifying both winter milk production and early calving. And it has made milk production economically possible on country that was previously regarded as being practically worthless for any type of farming.

Topdressing is a fairly wide term and embraces the application of phosphate, lime, potash, and nitrogen, together with certain minor elements, such as cobalt.

Owing to the importance of the various topdressing materials used it is advisable to consider each of them separately.

In the bringing in of ploughable scrub country heavy applications of phosphate and the sowing of certified seeds are necessary for the production of good pastures.

Just what you've been waiting for!

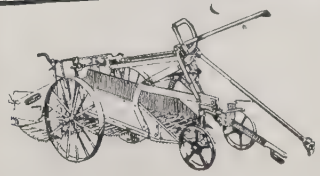
NEW!

Engine functioned Potato Digger . . . Completely controlled from Tractor. Illustrated right, showing engine mounted.

"EASI-DIG"

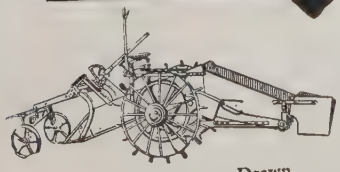
(IMPROVED ASPINWALL)

POTATO DIGGER



22in. and 26in. width Power Take Off Type. Easy draught, can be handled by the smallest Tractor.

HORSE OR TRACTOR DRAWN MODELS



Horse and Tractor Drawn Type . . . 22in. width only. Equipped complete with travelling bands.

The most rugged Digger for main crop digging (quickly adaptable to early market digging). Special shields guard dirt on cone type bearings . . . exceptionally light draught. Last year under possibly the worst conditions the "Easy-Dig" met all demands.

All models have 7-foot Elevator.

CUT WORKING COSTS WITH AN "EASY-DIG."

POST COUPON NOW!

ANDREWS & BEAVEN LTD.,
Moorhouse Avenue, Christchurch.

Please send me details, specifications and prices of (1) Engine Function Model, (2) Tractor Drawn Model, (3) Power Take-off Model (give Tractor model), (4) Horse Drawn Model.

(PLEASE STRIKE OUT WHICH DOES NOT APPLY).

Name .....

Address ..... J.A. 2/45

1. *Phosphatic Fertilisers*

The first importation of phosphatic fertiliser into New Zealand was in 1867, when some 450 tons of guano were brought in. It was not until 1892, when a consignment of basic slag was landed and used in the Waikato, that topdressing can be regarded as having commenced in earnest. By 1900 topdressing had become a regular practice in the Auckland Province. In 1914 some 30,000 tons of basic slag were imported, and a very large proportion of this was used for topdressing purposes. Subsequently there was a very marked change-over from the use of basic slag to the use of superphosphate. This change was due very largely to supplies of slag being cut off owing to the Great War. Nevertheless, superphosphate was proving itself to be both a useful and relatively cheap fertiliser. The use of superphosphate for topdressing showed its greatest increase during the recovery period following the depression of the early 1930's. In recent years up to two and three-quarter million acres have been topdressed annually with phosphatic fertiliser.

The main value of phosphate for topdressing purposes is its ability to stimulate the clovers. It is well known that if the clovers in a pasture are vigorous, the pasture as a whole is vigorous. Consequently phosphatic topdressing increases pasture production through the clovers. It is for this reason that in order that the best results from topdressing may be secured the sowing of clover in a pasture mixture is essential. Realising this, the number of farmers who do not bother to include clover in their seeds mixture is becoming less and less. Not only is it necessary to sow clover, particularly white clover, but also is it equally necessary to sow the strain of white clover that will make the best use of the phosphate that is applied. Such a clover is available as "Certified white clover," and should always be sown where white clover is to be used.

The quantity of phosphate that should be applied per acre is a very debatable point. Experience in this respect is the best teacher. On the first grassing out of ploughed scrub land heavy applications of superphosphate, from 6cwt. to 10cwt. per acre in the year, have been found to be necessary to establish a pasture and maintain it during its first year. In other parts satisfactory results are secured from the application of 1cwt. to 2cwt. per acre or even less per annum.

As a general rule, however, on fat lamb and dairy farms an annual application of 2cwt. to 3cwt. per acre is the normal practice.

The time of year that the pastures should be topdressed is also variable.

On a great deal of country the application of heavy dressings of lime is a preliminary essential to pasture establishment.

The time at which the phosphate should be applied really depends upon when the results are wanted. If late autumn and winter growth is to be stimulated, then it is necessary to topdress in the early autumn. On the other hand, if extra feed is required during the mid-summer period, then late spring topdressing is desirable.

2. *Lime*

The use of lime for agricultural purposes in New Zealand commenced with its application to an area of some 200 acres in the Edendale district in 1890. For a number of years the usual practice was to apply burnt lime by shovel from heaps in the paddock at the rate of two tons or so per acre. This application was usually made on land being prepared for turnip crops. In recent years the use of lime has increased very much throughout New Zealand, the greatest increase having taken place in the North Island.

At the present time almost three-quarters of a million tons of lime are produced each year, almost half of which is used in the higher-rainfall area lying to the south of Dunedin. Much of this lime is used for application to cropping land, but owing to the fact that it is available in the soil over a relatively long period, a large amount of this is of value to the pastures that are later sown on the same ground. Present-day topdressing of pastures with lime involves an area of about one and a half million acres each year, and there is little doubt that this area will expand as rapidly as production and distribution facilities will allow. The question of supply and cost rather than its desirability are the main factors limiting the greater use of lime.

Many parts of New Zealand are responsive to applications of lime. Throughout practically the whole of the South Island, with the exception of Central Otago, soils are lime deficient. In the North Island responses are particularly marked in North Auckland and parts of the Waikato, Rangitikei, and Manawatu districts. In other parts responses are generally appreciable, with the exception of the pumice country on the central plateau. In general the most responsive soils are those that have been subjected to prolonged leaching. Where leaching has been only slight, due to low rainfall, as is the case in Central Otago, the lime requirement of the soil is very low. New soils, such as those formed as the result of comparatively recent volcanic activity in the Bay of Plenty and the central plateau, show little or no response to lime.

On grassland the beneficial effects of lime are usually reflected in the

CHRISTCHURCH

RAM FAIRS

STUD RAM FAIR, February 22, 1945.
FLOCK RAM FAIR, March 15 & 16.

Entries may be made through Christchurch selling brokers. Liberal prizes will be offered for single shearling of each breed at the Stud Ram Fair. Special entry to be made for prizes. Breed societies have added liberally to Association's prizes. Judging will take place afternoon preceding fair.

M. E. LYONS,
Secretary, Canterbury A. & P. Association,
Box 296, CHRISTCHURCH.

increased vigour of the clovers in the sward. If the clovers are not beneficially affected, then there is little chance of the remaining constituents of the sward receiving any benefit.

Although the general range of soils that are responsive to lime has been outlined, more specific indications can be obtained. Undoubtedly one satisfactory method of ascertaining whether a pasture requires lime is to topdress a small portion and wait for visible results. This, however, has two disadvantages. Firstly, it usually takes at least a year for these results to show. Secondly, if no visible response can be seen, it does not necessarily follow that a payable response has not been secured.

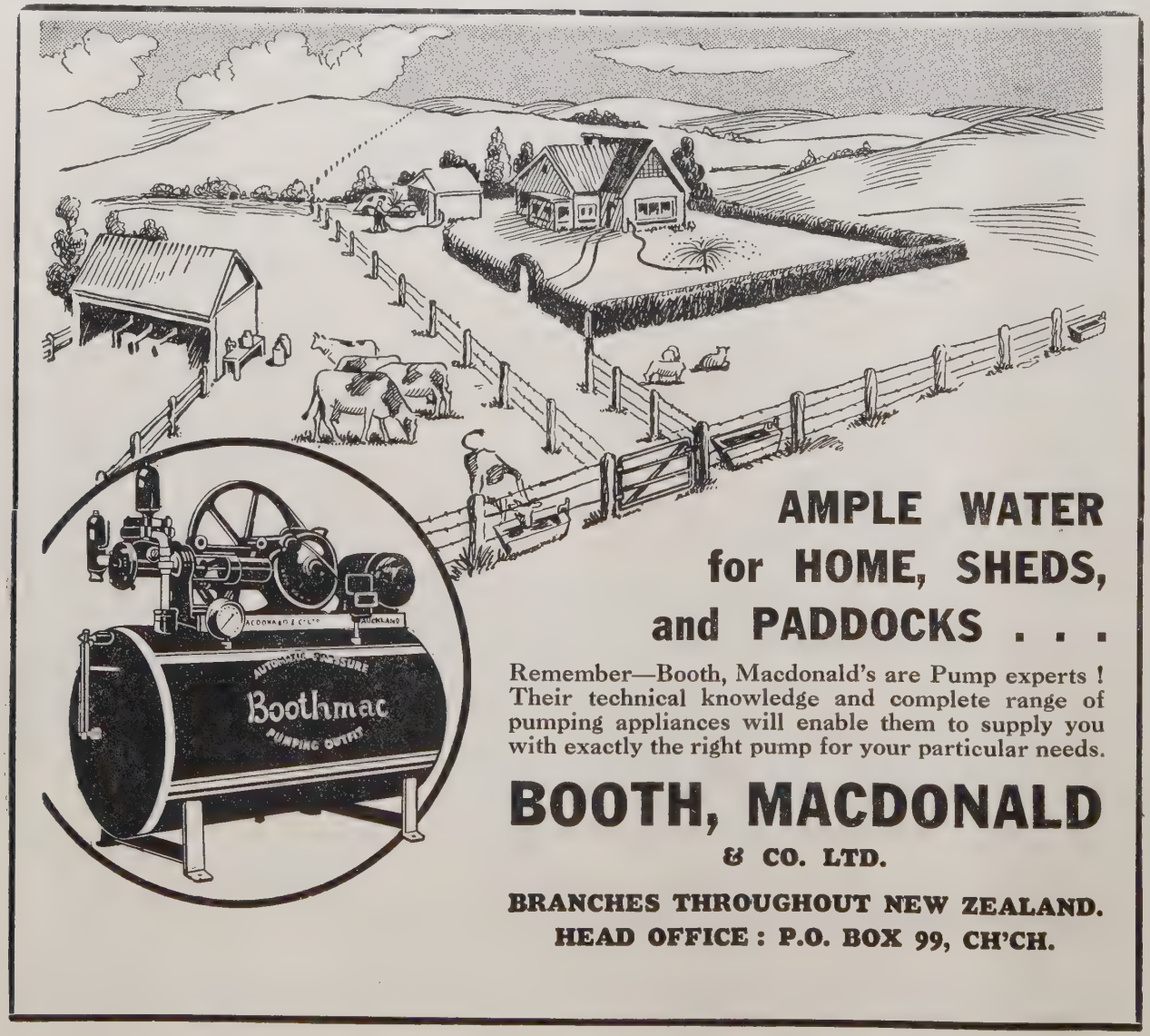
As a rule it can be accepted that country growing a dense mat of browntop will almost certainly respond to lime. The presence of sheep's sorrel in large quantities is often regarded as an indication that the country requires heavy applications of lime. While this may frequently be the case, it is liable at times to be very misleading, as poor, open swards on lime-sufficient soils may carry very considerable quantities of sheep's sorrel. Sorrel is more an indication of lack of competition from other plants than of lack of lime.

Certain chemical soil tests are available for ascertaining the lime requirement of the soil. These tests are sufficiently accurate to give a very good indication of whether or not any particular paddock is likely to give a marked response to an application of lime.

The quantity of lime to be applied is extremely variable, and no hard-and-fast rule can be laid down. On the poor browntop soils of the south one, two, or even three tons per acre of carbonate may be necessary, according to the condition of the ground. In general an application of one ton per acre is advisable before sowing down. Following this a further ton may be applied within 12 months if the soil is very lime deficient. The more usual practice is to follow the initial ton with annual applications of a quarter of a ton.

Elsewhere in New Zealand on lime-responsive soils the usual practice is to apply one ton at sowing down and a quarter of a ton every second year.

Of the two main types of agricultural lime used, namely, carbonate and burnt (shell), the former is used most widely, partly on account of the fact that the cost of transport is reduced, owing to the 100 miles free railage, and partly because it is so much more



AMPLE WATER for HOME, SHEDS, and PADDOCKS . . .

Remember—Booth, Macdonald's are Pump experts ! Their technical knowledge and complete range of pumping appliances will enable them to supply you with exactly the right pump for your particular needs.

BOOTH, MACDONALD & CO. LTD.

BRANCHES THROUGHOUT NEW ZEALAND.
HEAD OFFICE : P.O. BOX 99, CH'CH.

pleasant to handle for both man and beast.

Discussions frequently arise regarding the best time of year to topdress pastures with lime. Actually, this is of comparatively little moment and is best decided on in relation to when the lime is available and when other work permits of time to carry out the topdressing. In the past much of the lime was applied during the winter months, when other work was not so urgent. In recent years, however, owing to the large amount of topdressing carried out by contract from motor lorries, dry weather topdressing has become much more common. Time of application is really more a matter of convenience than one of necessity, the main thing being to "get it on."

One point to be borne in mind regarding lime and pastures is that in many districts best results are secured if lime is applied to the crop prior to the sowing out of the pasture. This helps considerably in rendering the soil conditions suitable for the pasture to establish. Subsequent applications are, of course, desirable.

3. *Nitrogenous Fertilisers*

Nitrogenous fertilisers are stimulants of leaf growth, particularly with regard to the grasses. Some nitrogenous fertilisers are harmful to clovers, whilst others are beneficial.

Of the various nitrogenous fertilisers usually available the following are the more important: Sulphate of ammonia, nitrate of soda, dried blood, and blood and bone. To this list must be added shed sweepings, which are regularly applied to pastures by some farmers in a liquid form. The use of nitrogenous fertilisers on a wide scale has never been adopted in New Zealand, nor is it likely to be in the future. Firstly, fertilisers such as sulphate of ammonia and nitrate of soda are relatively expensive manures in relation to the results obtained. Secondly, equally good results may be secured during most parts of the year through a general stimulation of the pasture by the use of phosphate and lime. There are occasions, however, when the application of nitrogenous fertilisers is warranted. Such occasions are those that necessitate hurried production of feed, such as in early spring or late autumn. For this purpose manufacturers used to prepare ammoniated superphosphate, which was a 1 to 2 mixture of sulphate of ammonia and superphosphate. Sulphate of ammonia, therefore, has a definite but limited use for the hastening of out-of-season growth. In some districts where clover growth is prolific its use as a spring topdressing has been recommended in order to stimulate the grass at the expense of the clover, particularly where a ryegrass seed crop is desired.

Shed manure is a valuable source of nitrogenous fertiliser for the stimulation of leaf growth.

A firm rolled surface is the most suitable condition for sowing seed.

Fertilisers such as nitrate of soda, dried blood, and blood and bone cannot be economically used for pasture topdressing when various phosphatic fertilisers are available.

In recent years there has been a very considerable increase in the number of dairy farmers who have developed the practice of applying shed manure as a liquid topdressing. Such manuring of pastures is very satisfactory, as it provides readily-available nitrogen in a form that does not harm the clovers. In addition to this, its cost is not high, the only costs involved being the labour required for its application, the running costs of the truck, and the construction of the various containers required.

4. *Potash*

Extensive trials carried out throughout New Zealand have shown that potash has a definite value in certain areas. Marked responses have been secured in some districts, including Waihi and parts of Taranaki. It is also of some value in the Waikato, particularly on the peats. In many parts of the country, however, potash gives no response. Consequently topdressing with potash cannot be recommended as a general practice throughout the country, and should be carried out only where evidence is available to show that a payable response is likely to be obtained.

PASTURE ESTABLISHMENT.

This matter embraces the period from the time that the ground is first prepared for seed sowing until the time that the sown pasture is established and in use. It is the most critical period in the life of a pasture, and consequently care at this time is amply repaid in after years. Establishment embraces many aspects and includes the following: Preparatory cultivation, time of sowing, manuring, seed sowing, seeds mixtures, nurse crops, and management subsequent to sowing. As all of these play an important part, each will be discussed separately.

1. *Preparatory Cultivation*

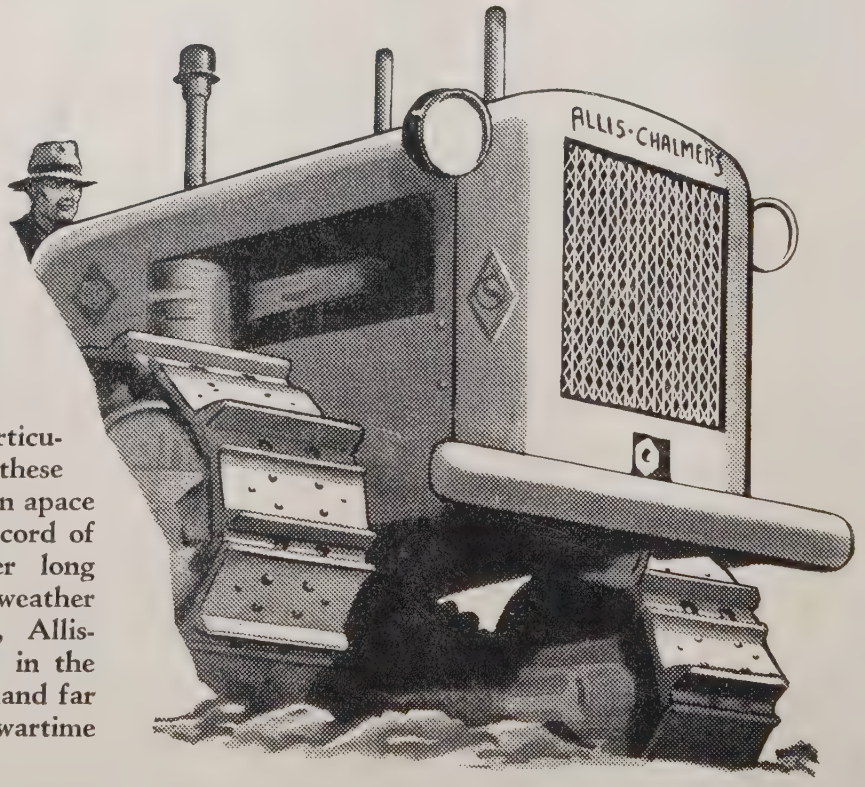
Although the methods adopted vary very considerably from district to district, the ultimate objective is the same everywhere, namely, the working down of the soil to such a condition that the sown seed will germinate readily and form healthy plants as rapidly as possible. Such a condition is that expressed in the frequently-repeated maxim, "a fine, firm, and moist seed-bed." Unless conditions are unusually favourable, seed will not germinate rapidly and evenly on a seed-bed that is cloddy above or below. A seed-bed is required to be well compacted right from the bottom to near the top. A sufficient but shallow tilth is required at the surface to

ALLIS-CHALMERS

The Most Sensational Agricultural and Industrial Tractors of the War Years –

Ever since the sturdy Allis-Chalmers line of Tractors made its bow to New Zealand farmers and industry, their ruggedness and ability to deliver economic, durable power over a wide speed range has made them an unqualified success with users.

During the war years particularly, the prestige of these brawny Tractors has grown apace . . . built on a sterling record of man-saving haulage, over long hours in all conditions of weather and ground. Today, Allis-Chalmers continues 'tops' in the industry . . . and the demand far exceeds the possible wartime supply.



But when the Factory has completed its huge assignments for the Victory fronts there'll be more tractors available to catch up with the widespread demand. *Meantime DOMINION MOTORS and its Dealers are proud to carry through their background of service and genuine Allis-Chalmers parts to give you and fellow owners the nearest thing to a brand new machine.*

North Island Distributors for Allis-Chalmers: **THE DOMINION MOTORS LTD.**

enable the seed to be properly covered. As the basis of a good pasture is clover, it is necessary to prepare a seed-bed that is suitable for the establishment of clover. If the seed-bed is satisfactory for clover to "strike," then it will be suitable for the grasses to "strike" as well. A cloddy seed-bed leaves

A rough and cloddy seed-bed is unsatisfactory for the establishment of pastures.

open spaces below the surface, which fact prevents the moisture from rising to the seed and germinating it. In general, clover seeds have a hard coat through which moisture does not penetrate readily, particularly when only a small amount is available. Grasses on the other hand have no such hard protective coat, and consequently will germinate more readily where the amount of moisture available is relatively low. It is for this reason that on a rough seed-bed one not infrequently sees a good strike of grass and a poor strike of clover.

2. *Time of Sowing*

This is dependent very largely on local climatic conditions. Winter and summer sowings are seldom successful anywhere, although occasionally mid-summer sowings may be satisfactory in high-rainfall areas. Autumn and spring are the most common sowing periods, early autumn being the most generally favoured, particularly in areas not subject to severe frosts. Spring sowing is satisfactory when it is likely that sufficient rain will fall to enable the pasture to become well rooted before the hot dry weather sets in. In cold districts subject to severe winter frosts spring sowing is most common, but if autumn sowing must be carried out, it should be sufficiently early to enable the clovers to become well established before the frosts commence. Clovers are subject to considerable damage and death through frost lift. If this does take place, a pasture very weak in clovers is likely to result.

In general autumn sowings on areas with an elevation of over 1000ft. cannot be recommended on account of the likelihood of frost damage during the winter.

3. *Manuring*

The type of pasture that will ultimately be secured depends to a very large extent on the fertility of the soil both at and subsequent to the time of sowing. If high-producing, fattening pastures are the objective, the soil fertility must be at such a level that the most productive pasture plants will thrive. If, on the other hand, as is the case on the poorer and steeper hill country, store stock pastures are aimed at, then lower fertility demanding grasses and clovers should be sown. Here the question of the raising of the soil fertility is not as important as is the case for fattening pastures.

In sowing down pastures one consequently has two choices with regard to the question of soil fertility. Firstly, that of not endeavouring to alter the fertility of the soil but of sowing chiefly low fertility demanding plants. Secondly, the raising of the soil fertility and the sowing of high fertility demanding plants.

It is in connection with the latter aspect that this section is chiefly concerned. The raising of the soil fertility does not begin and end with the application of lime and superphosphate; it really goes back much further than that. Previous cropping and utilisation play an important part. Ideally a pasture will establish and thrive best following a forage crop that is fed off by livestock. This action of feeding off and returning large quantities of valuable organic fertiliser to the soil is of great assistance in building up the fertility prior to sowing out. On the other hand, repeated white cropping tends to leave the soil in a relatively impoverished state, particularly with regard to nitrogen. Crops such as rape, kale, swedes, chou moellier, and greenfeed oats are much more satisfactory preparatory crops than wheat, oats, or barley saved for seed, all of which tend to deplete rather than to build up the fertility. Necessity, however, often prevents the most desirable course being taken, and consequently pastures are frequently sown down after exhausting crops.

In districts where it is required lime should be applied either before or at the time of sowing down. Within reason the longer the interval between liming and sowing out the greater will be the benefits secured from the lime.

The application of superphosphate or some other type of quick-acting phosphatic fertiliser at the time of sowing is most desirable, particularly from the point of view of hastening the establishment of the clovers, which respond readily to phosphate. As a general rule the customary manurial treatment when sowing down a pasture is the application of up to 3cwt. per acre of superphosphate. In areas where prosphate deficiency is very marked the application of a further 3cwt. per acre within the next six months is essential. In low-rainfall areas the initial application is usually 1½cwt. per acre.

4. *Seed Sowing*

In most districts it is advisable to sow the seed broadcast on a surface prepared by the Cambridge roller. This implement leaves a firm, fine, and slightly furrowed seed-bed, which facilitates the subsequent covering of the seed. Covering of the seed should be as light as possible, and is best carried out with chain harrows, scrub harrows, or very light grass seed harrows. Heavy, sharp tine harrows should be avoided, as these result in the seed being buried too deeply to enable it to germinate. This results in both a wastage of seed and in a poorer sward, through what is virtually a reduction in the rate of seeding. Experience has shown that of two extremes over-rolling will result in a much better strike than will under-rolling.

Specially Designed For Smaller Herds!

The Latest Model

Lister

Automatic Lubrication.
Seamless Supply Can.
Super Skimming Bowl.
Bell Speed Indicator.

Order Now!

THESE PRICES DEFY COMPARISON

15-Gallon — Cash Price, £10 9 0
35-Gallon — Cash Price, £19 19 0
55-Gallon — Cash Price, £28 14 9

Easy Extended Terms of Payment can be arranged if desired.
Send for Free Pamphlet.

Lister Separator Co.
(N.Z.) LTD.
HEAD OFFICE - - - AUCKLAND
P.O. BOX 63
Branches at: Whangarei, Hamilton, Palmerston North, Christchurch

281 MM TRACTORS

purchased by one concern in 22 years

In 1919 the California Packing Corporation, canners of the world-famous **Del Monte** products, looked around for 'the ideal tractor'. They bought a Minneapolis Moline Twin-City. The following year they bought four more, and the year after thirteen more. So it has gone on, till today this great concern with its Midwest farms of 20,000 acres is operating **281 MM Tractors.**

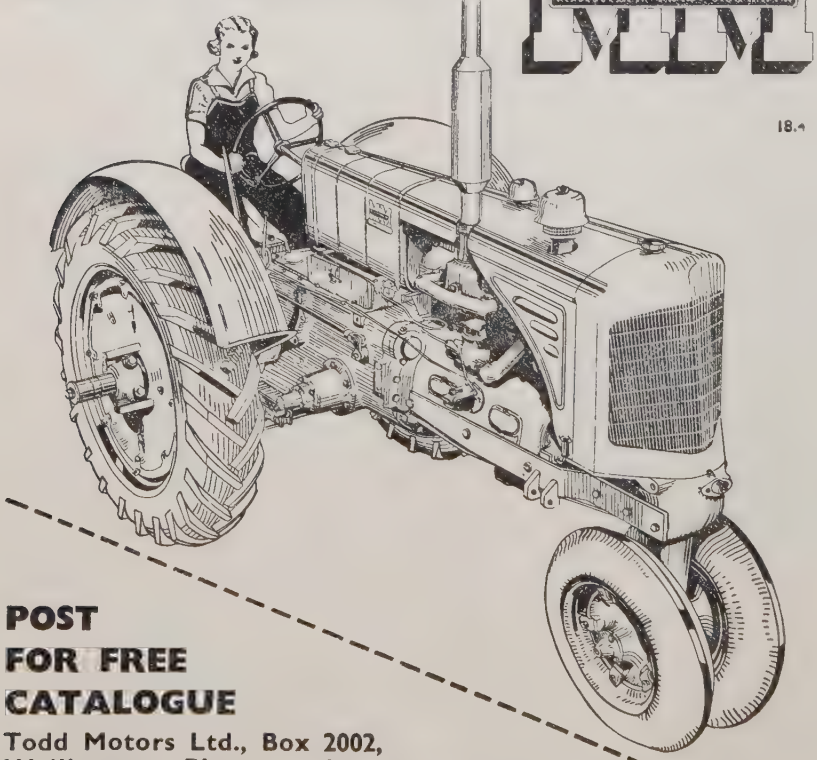
This represents the greatest known tractor endurance test—22 years of it on the world's largest testing ground. Averaging over 100 days of rough field work a year, and in addition, plenty of hauling and **full load belt work in operating the huge viners,** these MM Tractors have met every demand put on them.

Del Monte say, 'MM Twin-City Tractors have proved that they are durable, powerful and economical, and that they will do heavy work quickly.'

The world's largest privately-owned Farm Tractor fleet is conclusive proof of MM quality, long life and Economy.

79 YEARS OF QUALITY FARM MACHINERY MANUFACTURE

MM Minneapolis-Moline



POST FOR FREE CATALOGUE

Todd Motors Ltd., Box 2002, Wellington. Please send me free MM Tractor leaflet.

'A'

Name

Address

In some districts, notably in the drier parts of Canterbury, the sowing of the seed through the grain drill in the standard 7in. spaced drills results in a better strike than when the seed is broadcast. It also has the advantage of placing the seed in direct contact with the accompanying fertiliser. This method of drilling, however, has the disadvantage of leaving a considerable area of bare ground, particularly in the initial stages. In recent years the practice of sowing the seed by the drill with the tubes removed has increased and has proved to be satisfactory. By adopting this means a proportion of the seed falls into the coulters and is drilled in the usual manner, while the remainder falls in the spaces between the drills, thus resulting in a satisfactory cover. For a number of years trials have been carried out in an endeavour to drill the seed with coulters spaced at 3½in. intervals instead of the usual 7in. While this is satisfactory, considerable trouble is frequently experienced in hold-ups due to clods and rubbish blocking between and on the coulters. Another objection is that this method entails the construction of an expensive type of drill that is useful for this one purpose only.

5. Seeds Mixtures

Although the question of specific seeds mixtures has already been dealt with in relation to the various types of country and the various types of pastures required on them, there are certain general matters that warrant some discussion.

As time goes on it is becoming more and more apparent that care is required in the selection of the seeds mixture to be sown. Just as certain breeds of stock or certain associations of stock have proved to be best adapted for specific conditions, so has it been found that certain species of pasture plants in various combinations are best suited for various specific conditions of rainfall, temperature, fertility, and utilisation. The time has passed, or is rapidly passing, when a farmer purchases a standard seeds mixture year after year and sows it down for the production of pastures which may or may not be utilised in a variety of different ways or by several classes of stock. For example, it may be advisable to sow one mixture for sheep grazing, another for cattle grazing, another for continual haying, and yet another for seed production. While the sowing of a common mixture for all of these purposes will undoubtedly give fairly satisfactory results, it is liable in the long run to be less suitable and more expensive than specific mixtures.

While on the subject of seeds mixtures a short discussion on seed itself appears to be warranted. Seed is of value in two respects only. Firstly, it must be capable of germinating and

As a rule cereal nurse crops do not assist in the establishment of a pasture. They are, however, satisfactory for the establishment of clovers, provided that they do not exert a smothering effect.

producing a plant, and secondly, it must be capable of producing the desired kind of plant. Provided that a line of seed combines these two factors, then many other factors, such as appearance and bushel weight, fade into insignificance. Of what real value is the appearance of seed? Often it is liable to be not only deceptive but also very misleading. A line that looks perfectly good and that might take a first prize on a show bench may be virtually worthless from the farmer's point of view, as it may germinate poorly, or if it does germinate, it may produce only poor types of plants. Providing that the germination and type are satisfactory, then the question of outward appearances may be worth taking into account. It should be remembered, however, that the only things that really matter in connection with the seed itself cannot be seen.

The question of purity is important also. Field-dressed seed frequently contains a large proportion of chaff and useless material besides the seed of many weeds. It is seldom worth while sowing field-dressed seed unless it has been harvested from a pasture that is practically weed free. As far as weed seeds are concerned the percentage present is not as important as the type of weed seed. For example, a small percentage of, say, spurrey in a sample of ryegrass is of very little moment when it is to be sown on land that is already infested with this weed. On the other hand, if it contains an even smaller percentage of, say, goose grass, burr clover, or Californian thistle, much trouble may be encountered through the sowing of it, particularly if the area is to be shut up for seed production. Modern seed-cleaning plants in New Zealand, however, have reached a stage when the dressing of all farm seeds has reached a high state of perfection. As a rule, therefore, farmers are usually able to secure good, clean lines of seed from most of the seed merchants throughout the country. With regard to the question of strain in pasture plants, this has now become an accepted feature of farming.

Research and farmers' experience have found that in most of the more common and more valuable pasture plants certain types or varieties, or strains, are more valuable than others. These are now embraced by the seed certification scheme conducted by the Department of Agriculture. Certified strains of the following pasture plants are now available to the farmer: Italian ryegrass, H1 ryegrass, perennial ryegrass, cocksfoot, browntop, white clover, Montgomery red clover, and broad red clover. Any farmer sowing down pasture of any kind is strongly advised to use the certified strains of pasture plants where these are available. The seed certification scheme is conducted for the benefit of farmers and should be taken the fullest advantage of by them.

Although much has been said and written for many years about cheap seed mixtures, much of this is still stocked by firms for supplying farmers who want it. Actually the so-called cheap seed mixtures are almost invariably very expensive when the cost of the desirable seed is taken into account. Although good seed may be dear, so-called cheap seed is often dearer still, in addition to containing considerable proportions of undesirable plants.

6. Nurse Crops

The use of nurse crops is confined mainly to the arable farming districts, where they are sown in connection with short-rotation pastures. In the higher-rainfall areas, particularly in the North Island, nurse crops are seldom used, on account of their liability to smother the young grass and clover seedlings.

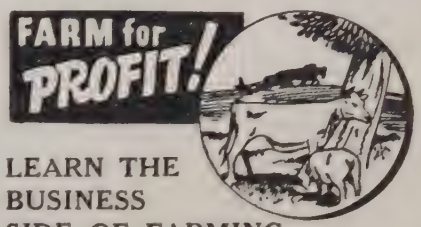
In connection with pasture establishment so-called nurse crops are annual crops that are sown either previous to or at the time of sowing the land out to pasture. Many crops are used in this connection, including wheat, oats, barley, ryecorn, linen flax, turnips, rape, and mustard.

The chief objective in this double sowing is to save both cultivation and time with regard to unproductive ground. Occasionally, but very seldom, does the annual crop act as a protection of the young pasture. Very frequently it has the opposite effect. namely, that of smothering the young establishing pasture.

Whether the association of the annual crop and the young pasture results in a satisfactory grass cover or not depends on the nature of the annual crop, the growth that it makes, and the manner in which it is utilised. For example, a sprinkling of soft turnips in a young pasture can do very little harm. On the other hand, failures of the grass to strike satisfactorily are common when it is associated with heavy crops of rape or oats. Linen flax, wheat, and other crops with a minimum of flag which shades the ground are much more satisfactory than heavy shade producing crops that are also liable to lodge. The sowing of pasture with linen flax is not entirely satisfactory on account of the fact that the pulling of the flax is liable to loosen the clover plants, particularly if the ground is dry. Clovers will generally establish better under a nurse crop than will the various grasses. This is partly due to the fact that they are better able to stand shading in the early stages than the grasses, which, under these conditions, usually become very drawn and weak.

Nurse crops on the whole are not desirable from the point of view of pasture establishment. For the establishment of clover swards, however, they are satisfactory, provided that the nurse crop does not grow sufficiently vigorously to convert the cover into a smother. Early spring sowing under wheat has been proved to be very successful in the establishment of Montgomery red clover.

There is one set of circumstances, however, under which the use of nurse crops is almost indispensable, and that is in connection with the grassing down of sand country. There the



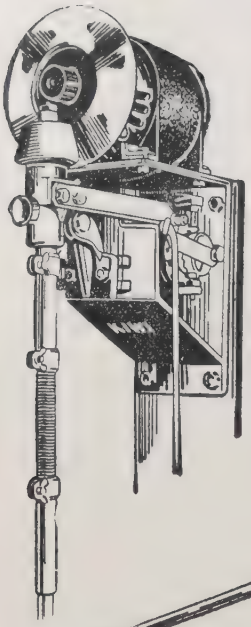
LEARN THE BUSINESS SIDE OF FARMING . . .

What to watch in buying a farm . . . how to finance and start on your own . . . how to keep simple books that give you a monthly record of your profit and loss . . . useful tips on the law that every farm manager should know . . . these are only some of the essential details taught by the Druleigh Book-keeping and Management Course. It teaches you to take out your own Balance Sheet and Income Tax Returns . . . to become an efficient farmer.

Druleigh's special Diploma Course of Home Study training on Farm Management, Farming Law, and Farm Book-keeping is specially written by experts. A wonderful investment for any young man who wants to make farming pay.

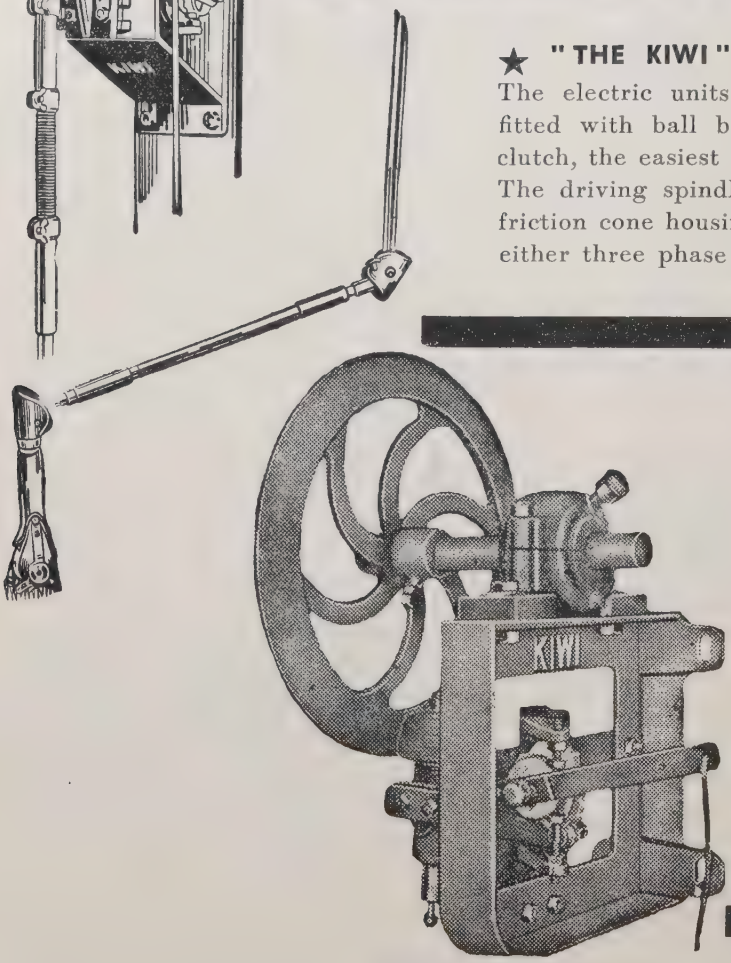
BE A SUCCESSFUL FARMER!

DRULEIGH College of FARM BOOK-KEEPING
VULCAN LANE, AUCKLAND.
Dear Sirs,—Please send me, without obligation, full details of your simplified Farm Book-keeping and Management Course.
NAME .....
ADDRESS ..... J.A.



THERE'S A "KIWI" LINE FOR *every* SHEARING NEED

★ **"THE KIWI" ELECTRIC SHEARING MACHINE.**
The electric units are driven by best British motors fitted with ball bearings. Fitted also with the cam clutch, the easiest and most positive in and out gearing. The driving spindle is running in ball bearings inside friction cone housing, packed with grease. Driven with either three phase ½ h.p. or single phase motors.



★
THE "NEW KIWI" STANDARD
Fitted with ball-bearing Plummer Blocks and Ballraces for spindle and new "Patented" Cam Clutch, the easiest operated and most positive type of gearing. The electric units are friction-driven with either single or three-phase ½ h.p. motors.

★ **SHEARS WE CAN RECOMMEND**
For crutching and dagging. The patent gap stop as in the illustration does not squeeze the blades together, but prevents them from separating. The result is the blades have less set and will therefore keep their edge longer and the densest and dirtiest wool will not cause gapping, and the work is therefore easier and quicker. **In sizes 5ins. Dagging; 6ins. Lambs; 7¼ins. Sheep.**

POST THIS COUPON NOW

MESSRS M. J. HOOPER & CO LTD.
Federal Bldgs., 97 Albert Street, Auckland.
Please send me a copy of your free illustrated Catalogue of modern farm implements.

NAME .....

ADDRESS .....

.....J.A.

M. J. HOOPER
and Co. Ltd.—in association with
"NEW KIWI" SHEEP SHEARING MACHINE CO. LTD.

Office and Showroom: Federal Buildings, 97 Albert Street.
Works: 90 Federal Street, AUCKLAND.

sowings of crops such as turnips or some quick-growing cereal assist in the case of the turnips in the raising of the fertility and early consolidation of the land, and in the case of the cereal the protection of the young pasture plant seedlings from being smothered by sand.

7. *Management After Sowing*

As has already been mentioned, the most critical period in the life of a pasture is in the early stages, when it is in the process of establishing, and anything that can be done to help the pasture along at that stage is well worth while. Weed competition is in some areas very troublesome, particularly with regard to plants such as fat hen, wild turnip, and some of the twitches. Other weeds such as spurrey, chickweed, and sorrel, although exerting some degree of competition, are seldom dangerous competitors, as they can be readily reduced by grazing.

The first grazing of a pasture is important. Every encouragement must be given for the young plants to tiller out and form a turf. As a rule this can be assisted very much by a light early grazing before some of the quick-growing grasses have reached the stage where they are exerting a smothering effect on some of the slower-establishing species. A light grazing by a relatively high concentration of stock, say, 30 sheep or more per acre, enables the pasture to be eaten down evenly all over. On the other hand, a light concentration of stock grazing the same area over a much longer period gives rise to uneven and discriminating grazing, which results in patchy and possibly unsatisfactory establishment of parts of the paddock. Heavy winter grazing of a young pasture is undesirable, as this may lead to severe destruction, particularly when conditions are at their wettest.

When sowing down a pasture a light seeding of rape or turnips provides early feed and does little harm to the pasture.

8. *Hill Country*

So far all references to pasture establishment have referred to those on ploughed ground.

Although the establishment of pastures following bush burns is basically the same, there are many aspects that are entirely different. On bush burns it is not possible to prepare a seedbed or to cover the seed adequately. Nor is it possible to pay the same detailed attention to the early grazing of a large bush burn with stumps and logs present as it is to a small paddock on ploughed land. The complete establishment of a bush burn is a process lasting for many years and embraces the time from the actual burn to the time that the ground is freed from logs and stumps, perhaps 25 years or so later. During this period the main concern is that of combating the ingress of undesirable plants such as manuka, bracken fern, hard fern, and bidi-bidi. Much trouble is eliminated by a successful initial burn and a good take of the most suitable seeds. The most important feature in the establishment of swards on hill country is the selection of a seeds mixture which will ultimately produce a sward able to exist under conditions of low fertility.

Sod-bound paspalum may be renovated either by drastic harrowing or by ploughing in narrow furrows.

HARROWING OF PASTURES.

Two types of harrowing are carried out on many farms. Firstly, there is the light surface harrowing, and secondly, there is the drastic penetration type.

Light surface harrowing is useful almost entirely for the spreading of animal manure evenly over the paddock. Such spreading is most desirable, as is shown by the very uneven nature of the growth left after grazing on paddocks that are not harrowed. Droppings that are left undisturbed result in rank, unpalatable growth, and not uncommonly in bare spaces which ultimately provide an excellent seedbed in which weed seeds may establish. Drastic harrowing with harrows built to penetrate into the soil has been a debatable subject for many years. The general consensus of opinion over a number of years is that drastic harrowing of a good sward is liable to do more harm than good, in that it is liable to destroy a proportion of useful plants and to leave spaces in which undesirable ones may establish themselves. Drastic harrowing of a really poor run-out pasture will doubtless result in its improvement, but a pasture that has reached such a condition is ready for the plough in any case.

A pasture in fair condition may be considerably improved, however, through drastic harrowing, provided it is subsequently surface sown with a suitable seed mixture and topdressed. Sod-bound paspalum pastures, for example, benefit considerably from drastic harrowing.

TOPPING OF PASTURES.

Even though the maximum area of a farm may be shut up for hay or ensilage, it is very seldom that a certain amount of seed stalk and roughage does not develop in the remaining pastures during the early summer. In most pasture plants there is a marked tendency towards a reduction in leaf production at and subsequent to flowering. Once a plant has flowered and set its seed its main work for the year has been completed as far as the plant itself is concerned. Consequently, an abundance of seed heads, combined with rank leaf growth and dry weather during the summer and autumn months, is usually associated with relatively low useful leaf production and consequently a lower carrying capacity.

If, however, plants are trimmed and prevented from flowering and setting seed, then the energy of the plant is directed, at least in part, to more leaf production. Consequently, early summer topping of pastures has become a common practice, having as its objective the prolonging of the period of summer and early autumn growth. In addition to this, regular topping of pastures has the advantage of preventing undesirable grasses such as sweet vernal and Yorkshire fog from seeding and spreading.

With the rapid increase in farm mechanisation on dairy farms much work that hitherto involved too much time is now possible. Topping of pastures is becoming increasingly common very largely on this account.

Hay and Silage

The production of hay and silage from pastures serves two main purposes. Firstly, it enables feed produced during a peak growth period to be carried over to a time when pasture production is very low, namely, in dry summers and winter. Secondly, it enables the pastures to be maintained in a state of high production and good composition as the result of the removal of surplus growth.

The quantity of hay and silage saved annually has shown a phenomenal increase in recent years. As recently as 1920 the total area saved for hay and silage was under 200,000 acres. In 1940, when hay and silage production from pasture was at its peak, over 900,000 acres were saved for hay and over 280,000 acres for silage. In addition to this over 100,000 acres of lucerne were saved for hay, making a grand total of well over a million and a quarter acres.

While the saving of hay is general on all dairy and fat lamb country throughout the Dominion, only a relatively small quantity of silage is made in the South Island. Actually 80 per cent. of the total silage is saved in the Auckland and Taranaki land districts.

Whether silage is made or not depends very largely on whether or not there is a surplus of feed at a time when weather conditions will not permit this surplus to be made into hay. In the North Island with its early spring growth there is usually surplus growth in the late spring and much of this is converted into silage. In the South Island, however, where the spring is much later than it is in the North there is no surplus feed at that time and by the time that there is a surplus the weather conditions allow it to be made into hay.

The cutting of either hay or silage tends to weaken a pasture, particularly with regard to white clover. A paddock that is shut up year after year generally tends to become

Faster . . . safer . . . more efficient, The Gane Milking Machine is the ideal answer to the challenge for ever-increasing production. Equally important is the fact that dairy control orders have been modified in New Zealand and ample stocks of Gane are now available.

Gane

MILKING MACHINE CO. LTD.

GANE BUILDING,
Anzac Avenue, Auckland.

Branches at Whangarei, Hamilton, Palmerston North, and at Sydney, Australia.

strong in tall-growing grasses, such as cocksfoot, and weak in clovers. Consequently, if it is desired to maintain good pastures of an even composition, the closing up of paddocks for hay or silage should be rotated as far as is practicable. Early cutting of ensilage enables a pasture to come away well before the heat of the summer commences. Early cutting of hay is also desirable, as not only is a better quality product made, but also a better aftermath growth is secured in the early autumn.

With regard to both hay and silage quality is important. If poor material is saved, then the product will be poor. Frequently very inferior pasture is made into silage. While there is no doubt that stock will eat it, the product has not as high a feeding value as silage made from good pasture. The same applies to hay. This should be cut at the time most of the grass is in flower. If cut earlier than this, quantity is sacrificed with little gain in quality. On the other hand, the quality of the hay depreciates very rapidly as cutting is delayed after flowering. Not infrequently hay is cut at a time when the pasture is almost fit to cut for seed. Not only is the quality low but also, if the pasture is not the best, a considerable quantity of seed of inferior grasses and weeds is allowed to ripen and to be spread when the hay is fed out in the winter.

Silage is made in high-rainfall areas where the weather conditions do not permit hay to be made for surplus spring growth.

SEED PRODUCTION.

For many years pasture seed production has been an important adjunct to other farming activities in certain parts of New Zealand. At one time or another the saving of seed has been attempted in many districts. At the present time, however, the greatest part of New Zealand pasture seeds is produced in Canterbury, with a considerable amount in Otago and Southland as well.

Table L, adapted from N.Z. A. & P. statistics 1942-43, demonstrates in a general way where pasture seeds are grown. The figures represent percentages of the total acreage harvested.

This shows clearly that, with the exception of browntop, chewings fescue, and crested dogstail, Canterbury harvests by far the largest proportion of pasture seeds.

In seed production the main aim is high yields per acre associated with good-quality seed. In practically all cases the main requirements for this are dry harvesting conditions with a minimum of materials to handle. Irrespective of what kind of seed is being harvested, a short, well-filled standing crop is in most cases infinitely better than a tall, poorly-filled crop that is liable to go down in wet weather. This applies particularly to clovers. A standing crop will produce much more high-quality seed than will a rank lodged crop. Rank lodged crops are very liable to produce poor-quality seed as well as entailing much unnecessary work in handling at harvest time. For these reasons the best seed-producing areas are those situated, not on the first-class rich country, but on the better improved second-class land. This country has sufficient fertility to mature a good crop of seed, but not enough to encourage rank growth.

As a rule first-harvest crops are the most profitable, largely on account of high yields associated with good-quality clean seed. As a pasture becomes older yields decrease, and undesirable species come in, the latter resulting in heavier dressing losses and a much lower net return.

As the even flowering of a seed crop is most desirable, it is essential that growth at the time of shutting up should be evened up as much as possible either by stock or the mower.

It is frequently argued that first-harvest seed is not as good as seed coming from an old pasture. This may have been the case in the past, when a great deal of the perennial ryegrass and white clover harvested was of an annual type. Under those conditions the harvesting of seed from old pastures tended to result in the selection of a more persistent strain than it did with those crops harvested repeatedly from young pastures. Nowadays, however, with the seed certification scheme in operation, first-harvest seed is almost invariably as good as and often better than that secured from older pastures. Seed certification guarantees that the type of plant that the seed harvested will produce is of a defined superior type. Whether it comes from a young or old pasture is immaterial as far as type is concerned. In the sowing down of pastures for seed production some care should be taken in the selection of the seed from the point of view of purity. The sowing of clean seed will do much towards the harvesting of clean seed.

TABLE L—PERCENTAGE OF PASTURE SEED CROPS GROWN IN THE VARIOUS DISTRICTS.

Species.	*Canterbury.*	*Otago.*	*Southland.*	*Rest of N.Z.*	*Total.*
	%	%	%	%	%
Perennial ryegrass	60	14	12	14	100
Italian ryegrass	84	6	7	3	100
Cocksfoot	66	7	25	2	100
Chewings fescue	2	6	92	—	100
Crested dogstail	15	9	75	1	100
Red clover	71	14	7	8	100
White clover	59	18	18	5	100
Browntop	13	63	24	trace	100

The continued cutting of a pasture for hay tends to result in a reduction in the quantity of clover.

ISSUED BY THE DEPT OF HEALTH

YOUR FEET
DESERVE
SOME CARE

Healthy feet are a blessing we don't appreciate until things go wrong. They go wrong mainly because of two things:

(1) Ill-fitting footwear. (2) Lack of attention.

When buying footwear *make sure*:

- **That the arch of the shoe fits the arch of the foot.**
- **That there is ample room for the toes to move naturally when walking.**
- **That the shoe is not too wide, or too narrow, or too long.**
- **In brief: See that it FITS COMFORTABLY.**

Give your feet this daily hygiene.

Bathe every day. For *dryness* of the skin massage the feet lightly with a vegetable oil. For *excessive perspiration* use a good foot powder (Not the kind that cakes when moist). For *foot tiredness and irritation* caused by shoe rubbing make a sedative foot-bath by adding a tablespoon of sodium bicarbonate (baking soda) or epsom salts to a quart of water.

ATHLETE'S FOOT: Cramped footwear, which jams the toes together, favours the growth and spread of the fungus which causes Athlete's Foot, a highly infectious and very common complaint, particularly in the summer. Athlete's Foot usually begins as a crack under the fifth toe. The skin becomes white and soggy and more cracks appear. Intense itchiness develops and blisters may appear and spread. For this condition medical advice is recommended.

"SERVICE" YOUR FEET IF YOU WANT THEM TO SERVE YOU

FOR A HEALTHIER NATION

12a

Seed-dressing plants in New Zealand have reached a high state of perfection, but even so very considerable losses are regularly incurred in the process of cleaning. These losses are unavoidable, as certain seeds are very difficult to clean without losses when they contain other seeds of a similar size and weight.

The following tabulates the more important pasture seeds together with impurities that are difficult and consequently costly to the farmer to dress out.

Species.	*Seeds difficult to dress out.*
Perennial ryegrass	Italian ryegrass, shelled goosegrass, English trefoil in the pod, cocksfoot, straw.
Italian ryegrass	Goosegrass (occasionally), white clover in the pod, hairgrass.
Cocksfoot	Small ryegrass, shelled goosegrass, damp Yorkshire fog in the shell.
Timothy	White clover, alsyke, suckling clover.
Red clover	Ribgrass, docks (sometimes).
Alsyke	White clover, timothy, suckling clover.
White clover ..	Alsyke, timothy, large suckling clover.
Chewings fescue	Catsear, small ryegrass, cocksfoot, crested dogstail.

Seed being purchased for sowing down pastures for seed production should contain as little as possible of the impurities listed above. Even a small percentage of an undesirable impurity in the seed has sometimes led to very considerable losses when the crop was subsequently harvested and dressed.

In sowing down pastures chiefly for seed production the aim should be to be able to harvest the desired seed free from other pasture seeds. For this reason seed-producing pasture mixtures as a rule contain firm species. The following mixtures are recommended for the production of the various seeds stated:—

1. **Perennial Ryegrass.**—Perennial ryegrass, 30lb per acre. White clover, 3lb. per acre.

This mixture will enable the ryegrass to be harvested the first season and the clover the second and subsequent seasons.

2. **Italian Ryegrass.**—Italian ryegrass, 20lb. per acre. White clover, 3lb per acre.
3. **Cocksfoot.**—Cocksfoot, 20lb. per acre. White clover, 3lb. per acre.
4. **White Clover.**—White clover, 3lb. per acre. Perennial ryegrass, 30lb. per acre.
5. **Red Clover.**—Red clover, 5lb. per acre. Ryegrass, 15lb. per acre.

It is seldom possible to harvest both ryegrass and red clover from the same paddock.

Although many pastures are sown down largely for the purpose of seed production, this aspect frequently has to take second place to that of grazing. As a general rule, and reviewing the farm as a whole, seed produc-

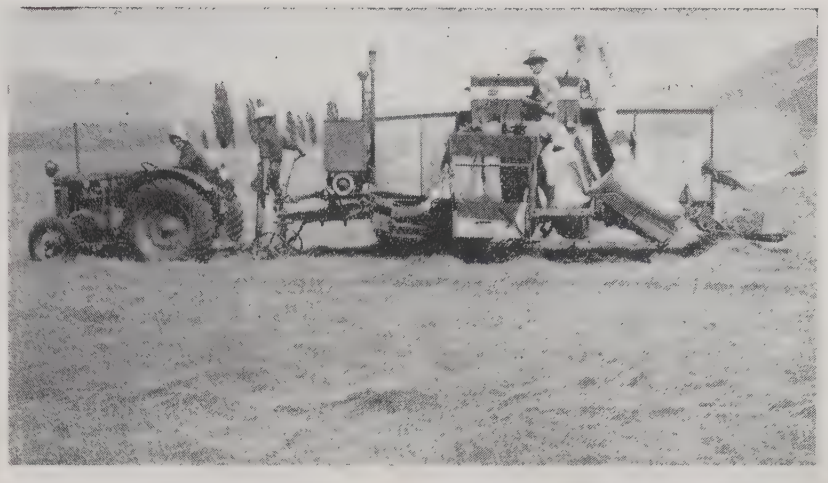
tion is of secondary importance to the carrying of livestock. Consequently, it not infrequently becomes necessary to sacrifice a potential seed crop when dry weather or other adverse conditions result in a shortage of feed. It is very largely for this reason that New Zealand pasture seed crop varies so much from year to year.

There are two main groups of farmers who produce small seeds. Firstly, there is the farmer to whom seed production is an operation of major importance. Secondly, there is the farmer to whom seed production is of relatively little importance, but who will save a crop occasionally when there happens to have been a surplus of feed. The first group of farmers nearly always sow the highest available class of certified seed, as this gives the best possible return. Farmers who are specialising in seed production are strongly advised to sow certified seed of the highest possible class, such as Government Stock seed, Pedigree seed, or Mother seed. Such seed, although more expensive to purchase in the first place, will make a handsome repayment for the original outlay if the resultant crop is at all satisfactory.

On the other hand, this highest class certified seed cannot be recommended for use by farmers who merely sow a pasture for grazing purposes and then, because of a flush of feed, decide to save it for seed. The outlay for Government Stock seed would certainly not be warranted in such cases. The sowing of certified seed is of course recommended for these farmers, but lower classes such as Permanent pasture and Commercial will give quite satisfactory results.

It is interesting to note that on a number of farms where the production of certified seed has become a regular practice the carrying capacity of the farm as a whole has increased rather than decreased, even though a greater area of pasture is shut up for seed than was the case in the past. This is due almost entirely to the fact that the pastures produced from certified seed are more persistent and much more highly productive than were those produced from the ordinary uncertified seed. In addition to this the soil fertility is also increased, firstly, by the phosphate and lime, and secondly, by the nitrogen applied by the increased number of stock carried.

Modern and efficient seed-cleaning machinery is an essential adjunct to the farmer's seed production programme.



In recent years mechanisation of pasture seed production has progressed rapidly.

Conclusion

An endeavour has been made to deal in a general way with some of the multitude of factors associated with New Zealand's pasture lands. It may appear that undue emphasis has been laid on the better grasses and clovers, as well as on the better country, at the expense, perhaps, of the very large area of poorer country. For this no apology is made. Experience over even the last 15 or 20 years has clearly shown that tremendous increases in production on good country have been possible, largely through the establishment of better pastures that have been treated better. That there is still ample scope for much improvement on the better country is clear to most people, and there is no doubt that this improvement will continue to take place.

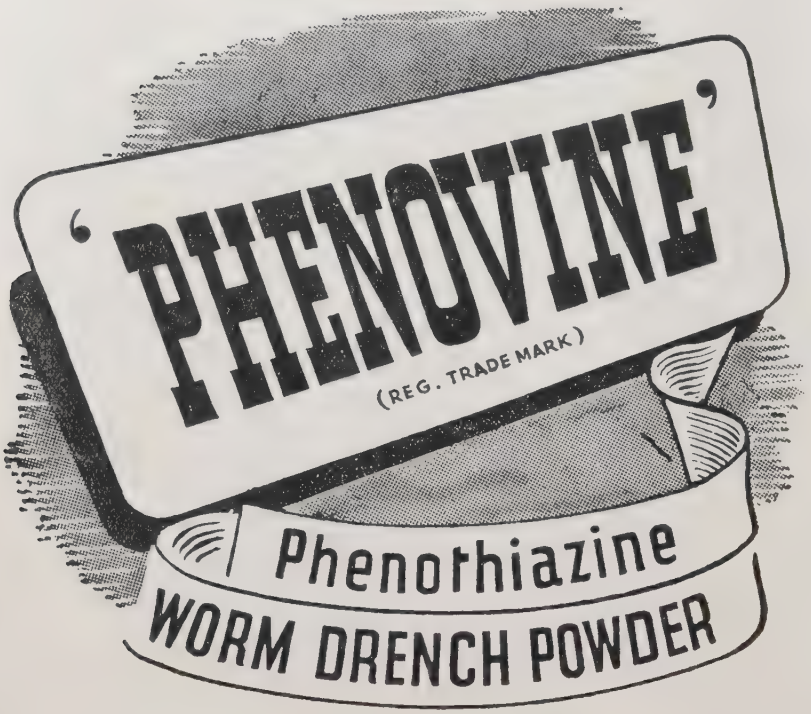
One of the most outstanding needs in farming, whether it is entirely pastoral or mixed arable and pastoral, is the raising of the soil fertility and the maintenance of it at a high level. This is being accomplished by the use of certified strains of pasture plants and top-dressing, which together enable the pastures to carry greater concentrations of stock. This in turn builds up the fertility to a sufficiently high state to enable a high-producing farm to be maintained.

The stage is now being reached in some arable districts where it is becoming necessary to plough up good pasture, not because the pasture has run out, but because this is necessary in the cropping plan. That such a condition is being reached should be the cause of much satisfaction, as there is no doubt that this indicates a programme of fertility building and not one of fertility depletion, as has been the case for so many years.

With regard to the poorer and unploughable country the present problem is not so much one of improvement, but rather one of maintaining it at its present level of production. To problems presented by secondary growth, hill country weeds, and soil erosion there appears to be no ready answer that will convert this land into good grazing pasture once more at a cost that the land can carry.

Preparing Land for Grass and Crop

A "FINE firm seed-bed" is the description usually applied when dealing with the preparation of land for sowing down to pasture or to crop. It is often thought that this can be obtained merely by giving close consideration to the last cultivation prior to sowing irrespective of the earlier cultural operations carried out. This is quite wrong, however, as the making of a fine firm seed-bed starts with the ploughing, and every operation, including the ploughing, contributes its share towards the ultimate objective. Where lea land is being ploughed the furrow should be rolled before the discs or harrows are used so that the furrow slices are pressed together and no air space is left between the furrows and the plough bottom. Subsequent working should be carried out with the idea of having firmness to a depth rather than in the surface soil only.



'PHENOVINE'

(PHENOTHIAZINE)

removes more worms in one dose than any other remedy

WHY?

FIRSTLY because Phenothiazine gives wider and more efficient control than any other drug yet discovered.

SECONDLY because, unlike any other drug, it sterilises the worm eggs at dosing and for a period of 4 to 5 days thereafter. Consider that one infected sheep can deposit up to *40 million* eggs on the pasture *daily* and you realise what this means . . . . *one dosing destroys up to 200 million eggs for every sheep dosed ! ! !*

This extraordinary control explains why the demand for 'PHENOVINE' is exceeding the war-time supply.

Write for informative Booklet.

(Registered pursuant to Stock Remedies Act, 1934.)

ALWAYS REMEMBER THAT YOUR GREATEST LOSS FROM WORMS IS NOT SO MUCH IN DEATHS AS IN THE SETBACK SUFFERED BY THE FLOCK IN GENERAL.

'PHENOVINE' IS THE ANSWER ! ! !

Obtainable from Stock and Station Agents.

COOPER, McDOUGALL & ROBERTSON (N.Z.) LTD.

CUSTOMS ST. E., AUCKLAND, C.1.

Also COOPER'S WORM DRENCH
(Carbon Tetrachloride)
For Liver Fluke and blood sucking Worms.

COOPER'S N.C.A. DRENCH
(Nicotine, Copper-Sulphate, Cobalt)
For Black Scour producing Worms—common in lambs.

Liver-Fluke of Sheep and Cattle

THE liver-fluke of sheep and cattle is a parasite which occurs in most countries of the world, and at times may be responsible for great economic loss from disease or death of infested animals, or from the condemnation of infested livers.

By
L. K. WHITTEN,
Parasitologist,
Animal Research Station,
Wallaceville.

IN New Zealand, fortunately, the parasite is confined to fairly limited areas, the most important being the Hawke's Bay County, where it was first recorded about the beginning of the century. Smaller areas to the north extend into the Poverty Bay district, and isolated foci have been reported from Opotiki and Ngaruawahia. It also occurs in small areas in the South Island—in the Owen Valley in the Nelson Province, in Central Otago near Lake Wanaka, and on irrigated country near Omakau.

Life Cycle

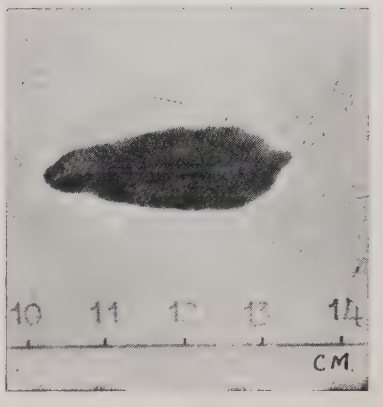
The life cycle of the fluke is a complicated one, which involves, as an intermediate host, a small fresh-water snail. The details of the life cycle were worked out in England by Professor Thomas, of Auckland, in 1883, but it was not until Macfarlane's work, begun in 1936, that the snails serving as intermediate hosts in New Zealand were shown to be *Myxas ampulla* in Hawke's Bay and Poverty Bay, *Myxas ampulla globosa* in Central Otago, and *Limnaea alfredi* in the Nelson Province.

The adult parasite can infest a wide range of hosts, including sheep, cattle, goats, horses, pigs, deer, rabbits, and man. In New Zealand, however, it has been reported only in cattle, sheep, and goats.

The adult fluke lives in the large bile ducts of the host, and there large numbers of eggs are produced, which eventually reach the ground in the host's droppings. If they become dry, their viability is soon lost, but if conditions remain warm and moist, the young embryo or miracidium hatches out in about 10-14 days. The miracidium swims actively, but unless it can find a suitable host snail, into which it burrows actively, it will perish in a few hours. Once within the soft tissues of the snail it develops through sporocyst and redial stages, and in six or seven weeks' time a crop of cercariae is produced. The cercaria is a small, free-swimming stage, with a rounded body and long tail; it escapes from the infested snail, swims in the water for a period, and then, attaching itself to vegetation, loses its tail and becomes a metacercaria enclosed in a tough resistant cyst to wait until eaten by a suitable host, when development can continue.

Eggs do not develop at low temperatures, but remain dormant, so that in the spring there may be a mass hatching of eggs accumulated over the winter and mass infection of snails will follow. Cercariae are liberated from the snail from about October until May, with a peak occurring about February.

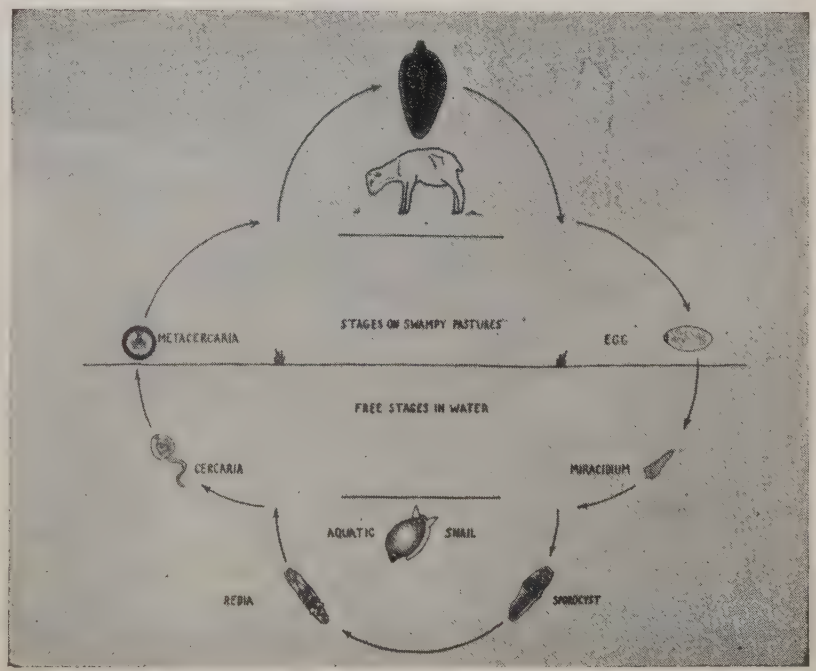
Within the final host the cyst wall is digested, and the young fluke thus liberated burrows through the intestinal wall into the peritoneal cavity, and then through the surface of the liver. It burrows through the liver tissue for a period of about six weeks, and eventually reaches one of the larger bile ducts, where it grows to maturity.



Adult liver-fluke *(Fasciola hepatica)* from bile ducts of a sheep (natural size).

It is clear then that the life cycle can be completed only in the presence of a suitable aquatic snail.

The habitats most suited to the snail in Hawke's Bay consist of seepages in limestone, sandstone, or mudstone country, where there is a covering of fine alluvium, and almost invariably the rush *Juncus lampocarpus* is present. Springs in peat, volcanic ash, or bush soils are unsuitable. The snail does not live in rapidly-flowing streams nor in stagnant waters, but prefers small boggy areas, where the flow is imperceptibly slow but con-



Life cycle of the liver-fluke.

Treat your sheep as blowfly strike is noticed during periodical inspection of flocks

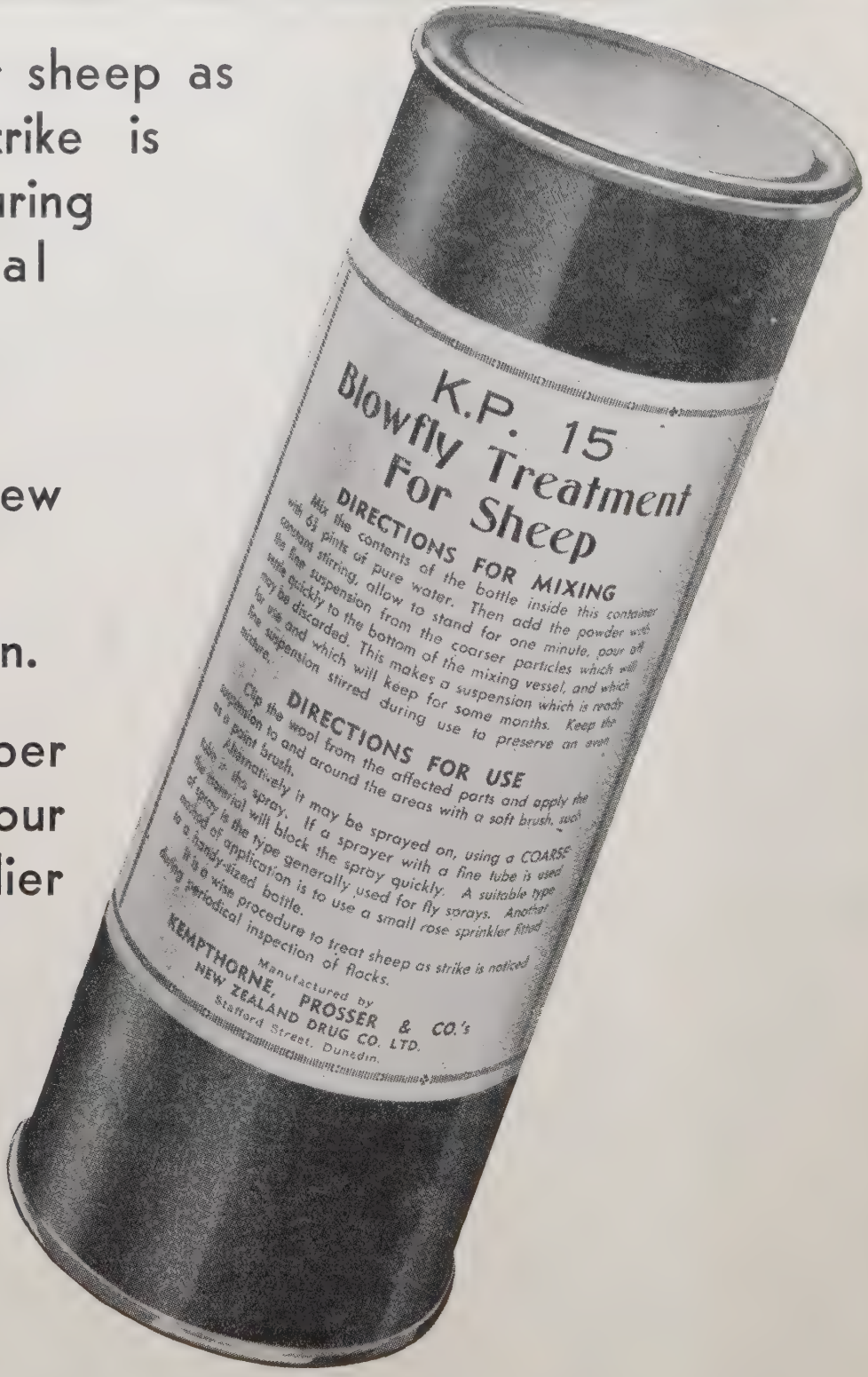
with this new

K. P.

preparation.

Price 6/6 per tin from your usual supplier

— quickly mixed for use, and will keep for months



Manufactured by

KEMPTHORNE, PROSSER & CO.'S N.Z. DRUG CO. LTD.

DUNEDIN

stant throughout the year. In such areas hoof-marks form small shallow pools where large numbers of snails may be found in the water or crawling on the damp mud. In Central Otago the snail is present in large numbers in the irrigation races and in the boggy areas along their banks.

Identification of Snails

The snails, which serve as intermediate hosts, are all rather thin-shelled. The direction of the coil is always to the right, and there is never an operculum or trap-door in front of the shell opening. Among the snails which do not serve as liver-fluke carriers the small black snail *Potamopyrgus* is coiled to the right, but has a rather thick shell and an operculum. This snail is by far the most common in streams and water races, but is not often seen in seepages. Another snail, *Isodora*, has a left-hand coil, but is not very common. There is in addition a small snail, *Planorbis*, coiled rather like a watch-spring, and found usually attached to weeds in water about a foot deep.

Chronic Fluke Disease

By far the most common manifestation of fluke infestation is the chronic disease caused by an infestation which has been contracted during the summer and autumn, or over successive years, and which may be in evidence only during the winter, when feed and climatic conditions are worst. The adult parasites produce a local irritation, which results in a thickening of the walls of the bile ducts, which may become so marked that the liver assumes the appearance which is commonly known as a "pipey liver," in which the thickened bile duct resembles the stem of a clay pipe. In addition, irritation may cause the deposition within the lumen of the bile ducts of a dark grey calcarious material, the gritty nature of which is evident when the bile ducts are cut open. The bile itself in such cases becomes thick, dark brown in colour, and contains large numbers of minute fluke eggs.

The most serious effects of fluke infestation are due to the anaemia caused by toxic substances liberated by the parasites. After absorption they cause a breakdown of the red blood cells. Pale skin and mucous membranes and a dropsical swelling below the jaw, the so-called "bottle jaw," are clear evidence of anaemia. During the winter sheep and cattle weak from fluke disease may die in gullies or bogs, where stronger animals would be able to get out.

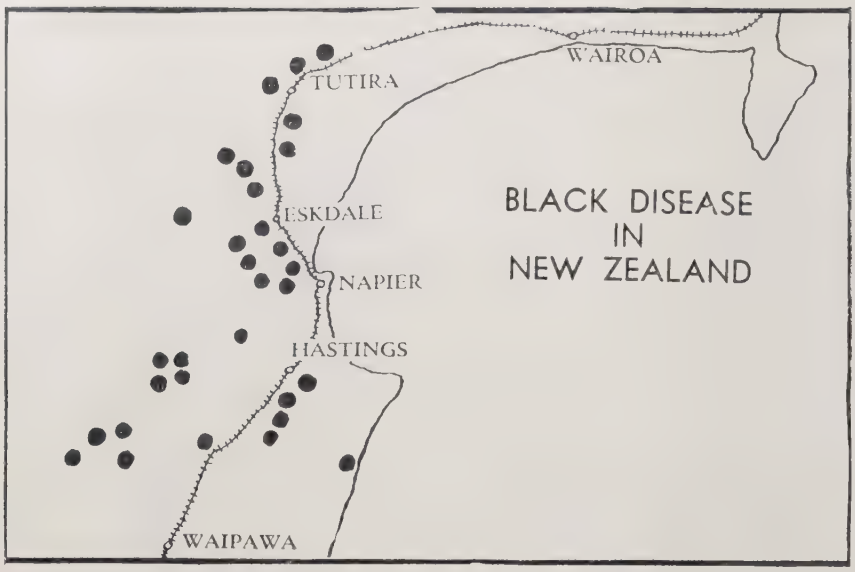
Geographical distribution of the liver-fluke in New Zealand.

Acute Fluke Disease

Acute fluke disease is caused by massive infections acquired over a short period. The disease is due entirely to the damage produced by young migrating flukes in the liver tissue. Post-mortem examination shows numerous small tracks present in the liver, and the peritoneal cavity may contain blood-stained fluid. Acute fluke disease usually occurs in the late summer and autumn, when the output of cercariae by the snails is at its peak and when sheep are forced to graze in swampy areas which they would avoid were abundant feed available elsewhere.

Black Disease

Black disease is a very acute disease which is associated with fluke in some areas, where it may assume much greater importance than uncomplicated fluke disease itself. Black disease is due to a spore-forming organism of the gas-gangrene group, *Clostridium oedematiens*. The spores may be present in the liver of perfectly healthy sheep, but damage produced by immature flukes provides conditions which allow its proli-



feration, and a small area of necrotic or dead tissue is produced in the liver, in which the organism multiplies further, producing a powerful toxin, which kills the sheep within a few hours. Sheep are seldom seen showing symptoms, but usually are found dead and in an advanced state of decomposition. A post-mortem examination reveals a marked congestion of the superficial vessels of the skin, which on drying will become black, to give the common name to this disease. The liver shows evidence of recent burrowing by young fluke and an area up to an inch in diameter of yellow necrotic tissue, surrounded by a deeply-congested zone separating it from the normal liver tissue. There is also a thick cloudy exudate present in the pericardial sac which encloses the heart.

Sheep dying of black disease putrify much more rapidly than those dying from other causes, and an examination should be made soon after death before the picture is masked by decomposition. Black disease, like acute fluke, occurs mainly in the late summer and autumn, when sheep graze in the swampy snail-infested areas.

Common fresh-water snails (natural size): 1. *Myxas ampulla;* 2. *Myxas ampulla var. globosa;* 3. *Limnaea alfredi;* 4. *Myxas arguta;* 5. *Isodora spp.;* 6. *Potamopyrgus antipodum;* 7. *Potamopyrgus corolla;* 8. *Planorbis spp.* Only Nos. 1, 2, and 3 are proven hosts for the liver-fluke.

Treatment

Carbon tetrachloride is very effective in the removal of fluke from the bile ducts. It may be given in doses of 1ml. of the drug mixed with 4ml. of liquid paraffin. Carbon tetrachloride may be given in gelatine capsules, but this method is slower and more expensive.

Drenching, if carried out once a year, should be done in mid-June. Most of the infection for that season would have been acquired by that time, and the animals would then be free of fluke over the winter, when their effect is more marked. On more heavily infected properties where two treatments a year are justified one should be carried out in mid-May and the second at the end of July to remove any fluke which have matured since the first treatment. On very heavily infested farms where symptoms are shown by May three treatments should be carried out, one at the end of April, one in mid-June, and one at the end of July.

On rare occasions a severe mortality may follow the use of carbon tetrachloride. The factors concerned are not understood thoroughly, but on properties where the drug is to be used for the first time it may be wise to dose a small number of animals a week or so before the general flock. Cattle, and especially milking cows, are very susceptible to the toxic effects of carbon tetrachloride, and it is not recommended that they should be drenched at all with this drug. At present no method of treating cattle is available, but hexachlorethane has been used overseas with promising results.

Prevention

Measures designed to prevent fluke infestation are generally aimed at the snail host, but where practicable sheep may be kept away from snail-infested swamps. In some circumstances fencing of such areas may be of value, provided that they do not then become foci for the spread of snails to adjacent areas, but fencing is not recommended where draining or chemical treatment of swamps is feasible.

Snails are susceptible to desiccation, and draining swamps will kill large numbers, but it appears that some

Myxas ampulla (magnified).

INVEST IN A

"COMPANION" RELAY ELECTRIC FENCE

The latest, safest, and most efficient Electric Fence obtainable. The "Companion" is completely insulated to ensure maximum output. Price £10/17/6. Available on easy terms.

Write for Details to . . .

JOHNS LTD.

23 CHANCERY ST., Auckland. Box 471X

are able to burrow into the mud and regain the surface later when conditions are more favourable.

Bluestone is very toxic to the snails. A solution of one part in 100,000 killed them rapidly. Bluestone may be applied at the rate of 25lb. to the acre, and may be broadcast mixed with 4 parts of sand to ensure a more even distribution. Spraying a solution of bluestone using a stirrup-pump or an orchard spray-pump is probably more effective but more laborious than broadcasting. With either method, however, it is very probable that some small areas may be missed, and such places should be marked with pegs beforehand. Even when the utmost care is taken it is exceedingly difficult to obtain complete eradication, and to keep the numbers of snails down to a low level treatment should be repeated at least at yearly intervals. Spring or early summer treatments will kill many of the snails before they have shed their cercariae.

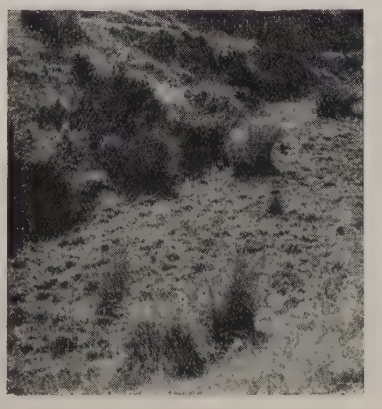
Black Disease Vaccination

A very effective vaccine for the prevention of black disease is available from the Animal Research Station, Wallaceville. The vaccine should be injected subcutaneously, using a sterile syringe and needles. It should be carried out in November or December, but since an unsightly lump results from the inoculation, lambs intended for export need not be vaccinated. The majority of these animals will be slaughtered before the usual autumn appearance of the disease, and in any case the incidence in lambs is very much lower than in older sheep. Animals carried over to the hogget stage, however, should be vaccinated.

Liver of a sheep infested with liver-fluke. Note the enlarged bile ducts of the left lobe.

Specimens for Diagnosis

Adult fluke may be removed from the bile ducts by applying gentle pressure. They may be preserved, if possible flattened between two glass slides, in 5 per cent. formalin or methylated spirits. Snails for identification may be preserved in formalin or spirit, or the shells may be sent after drying. A determination of the incidence of infections in snails is possible, but often only a few per cent. are infected, so large numbers must be examined. This is best done during the summer months, and live snails may be sent packed in a little moist water-weed. There is, however, little application for this type of examination, as the presence of fluke is much more readily detected in a slaughtered animal or the severity of the infection determined by an examination of a line slaughtered at the freezing works.



A typical habitat of the liver-fluke snail.

Applications for Rural Housing

CLOSING DATE EXTENDED

THE period during which farmers may apply to local Primary Production Councils for accommodation for farm workers under the Rural Housing Emergency Scheme, 1944, has been extended to March 31.

It is important that farmers wishing to take advantage of the scheme should furnish local councils with details of their requirements as early as possible, so that the Housing Construction Department, who are carrying out the scheme, may make arrangements regarding labour and materials.

Full details of the scheme, with plans of accommodation, were published in the October, 1944, issue of the "Journal of Agriculture," and a notice about the provision of additional rooms appeared in the December issue.

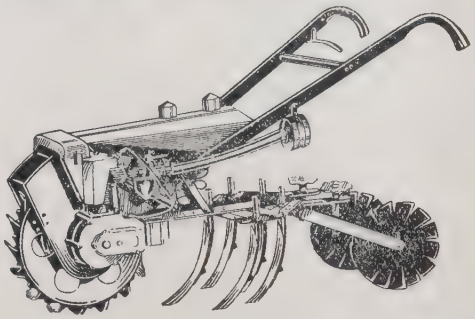
Keep Watch

Since Gunpowder Plot the cellars of Parliament in London have been searched for traitors. Are you keeping watch on the vital timbers beneath your home? Only strict maintenance will keep a timber house safe. Borer and decay threaten N.Z. timber, and Boracure now offer a House Maintenance Service which will *double* the life of all wooden property. Boracure experts will examine your home regularly and *prevent* decay. Get full details — no obligation.

BORACURE (N.Z.) LTD. B15.4
217 Lambton Quay, Wellington.
'Phone 40-050.

MORE FOR YOUR MONEY AND GREATER EFFICIENCY

WITH THE "GRAVELY"



ASK YOURSELF . . . .

Are you using modern power methods in your work? Are you still doing a large percentage of it by hand or horse?

The right power methods mean more than just a saving in energy. They mean, *and statistics prove,* that you can save time and money too . . . more than that, you can increase your own efficiency and that of your land while reducing costs.

This is the MODEL "D" 2 H.P. "GRAVELY" GARDEN TRACTOR used by, literally, hundreds of leading Nurserymen, Vegetable and Flower Growers in N.Z.

Special "GRAVELY" features include—

1. Specially designed for narrow row cultivation.
2. Easily handled in confined spaces.
3. Motor powerful, efficient and economical.
4. Eliminates bulk of hand work.
5. Tools attached front or rear.
6. Reasonable to purchase, cheap to maintain.
7. Adequate after-sales service.
8. Many machines in use 15 years and over in N.Z.
9. Wide range of tools and attachments available.

WRITE FOR LITERATURE.

IVORY BROS. LTD.

179 WAKEFIELD ST., WELLINGTON.

FARMING A SMALL HOLDING

In

Waitemata County

By

P. S. SYME,

Instructor in Agriculture, Warkworth.

Above: General view of farm. The 24 acres is subdivided into 8 small paddocks of approximately 3 acres each, and there is a good-sized garden.

WITH the problem of the rehabilitation of returned servicemen gradually becoming more insistent, the public interest in the possibilities of the small holding as a means of providing a satisfactory livelihood is keener than ever before. It has been said that a large proportion of the human race has always suffered from an unsatisfied land hunger. For the vast majority the chance of owning a farm of broad acres is remote, and for these the vital question is: What are the prospects of making a reasonably good and independent living on a small farm?

View of poultry section showing some of the birds.

THE answer to this question is by no means easy, as so much depends upon the man himself. But, given a liking for the life and the will to work for an independent living, the small farm offers plenty of opportunities for the right man. This, at any rate, is the opinion of Mr. J. H. Holman, who is making a successful living on his small farm at Te Atatu, about 12 miles west of Auckland. Before taking over this farm of 24 acres four years ago, Mr. Holman had had nothing more than a nodding acquaintance with farming. But, like plenty more, he had a natural liking for the land and was willing to learn.

When taken over the farm carried 18 cows and 80 head of poultry. The pastures had been badly overstocked and were not in a flourishing condition, while the fences and buildings were in a poor state of repair. The soil consists mainly of a light clay cloam overlying a heavy clay subsoil. It responds well to lime and phosphates, and under good management can be made to carry an excellent pasture.

Novitiate Year Well Spent

In his first year of operations Mr. Holman had everything to learn. The old birds taken over with the farm were by no means high producers, and the property was overstocked with 18 cows. Nevertheless, the novitiate year was well spent and he could see his way to improvements. After the first year's operations he sold off the old birds and replaced them with 300 day-old White Leghorn pullets, making provision for the additional housing required. By getting advice from successful men in the district he reared these without mishap, and his returns began to show a marked improvement.

The birds cost £30 as day-old chicks, plus 4/- each for rearing to the laying stage at 5½ months. As opportunity offered, the flock has now been increased to 400 birds.

Four years ago the cows grazed up to the door. All the work of transforming a cow paddock into this attractive setting for the house has been done by Mrs. Holman.

System of Operation

The birds are kept for two years and then sold at about 4/- each—sufficient to raise a bought-in chick to the laying stage. The eggs are sold through merchants at a controlled price and the returns from the flock of 400 birds amounted last year to £415 gross. The actual net profit was £210, representing about £1 per week for each 100 birds, the balance of £205 being accounted for by feeding costs and expenses.

The poultry are run on the semi-intensive system, with free range in the fields when the weather is suitable, and the only space occupied is that taken up by the houses. The work involves much careful attention to feeding as well as cleaning and spraying the houses to maintain healthy and productive birds. So far no serious trouble has been experienced with disease.

Milk for Town Supply

Realising that with only a small herd, every gallon of milk must be sold to the best advantage, Mr. Holman decided to go in for town supply. This involves milking right through the year and arrangements are made for the bulk of the herd to calve in March to get the full benefit of the higher off-season prices, while the remainder come in through the season to keep up the supply. The animals are fed purchased concentrates in the bails right through the season, receiving bran and molasses in winter and brewers' grains for the rest of the year. This costs about £52 a year—a lot of money for a small herd—but with milk prices averaging 1/0¾d. per gallon it pays. About 9 acres of hay is made each year, and some green crop may be grown for autumn and winter feed. This involves some outside labour, as the farm cannot afford to keep horses. The ordinary work of the farm is performed with the help of a converted car-tractor and trailer. For harrowing, topdressing, and feeding out this machine has proved invaluable and has done much to solve the labour problem.

Considering that only 15 cows (mostly Jersey) are milked, the returns are surprisingly high, amounting to £425 in the past year. Only one or two calves from the best cows are reared and replacements are purchased as required. Obviously, with so small a herd a return of £425 allows a fair margin for profit.

Future Prospects Bright

Regarding the future, Mr. Holman is optimistic. After taking over the property he was handicapped by having no working capital left. For this reason the work of improving the herd and increasing the flock of poultry was necessarily slow, as it had to be done out of income. With increasing capital becoming available, Mr. Holman proposes ultimately to increase the flock to between 600-700 birds, and hopes further to improve the production from his herd. While it is proverbially unwise to count chickens before they are hatched, this should considerably augment his income.

Specialisation v. Diversified Farming

It will have been noted that the farm income is derived solely from the dairy and poultry. Mr. Holman considered the possibility of developing side-lines such as fruit and bees, but he finds that his time is already fully occupied and is now of the opinion that, situated as he is, any attempt to exploit sidelines would merely lead to dispersal of effort and a smaller income. For the man with a family, however, such occupations could well be developed very profitably, even if they were mainly regarded as hobbies. He himself would prefer to specialise—either an all-poultry or an all-dairy farm. As it is, the farm is too small to provide a good living with cows alone. The fowls and the cows are in a sense complementary, as the pastures provide a freer range for the birds, while the birds in turn supply a useful amount of valuable fertiliser for the farm. The routine work can also be efficiently distributed between those two lines.

A Profitable Venture

During the past year the farm showed a gross profit of £878, allowing for the sale of old birds and bobby calves. Admittedly, this represents quite an impressive return from such a small acreage, but, unfortunately, it shows only one side of the ledger. Mr. Holman points out that a small farm with good land convenient to a market is apt to prove expensive, and may easily cost £100 an acre. Working costs, too, can prove surprisingly high. Speaking from his own experience his own working expenses over the past year would be approximately as follows:—

	£
Feeding stuffs	240
Repairs and maintenance, etc.	42
Freight and cartage	64
Fertiliser and lime	23
Rates (including water rate)	27
Depreciation	70
Electric power	21
Insurance	5
Total	£492

With gross receipts amounting to £878, this leaves the sum of £386, sufficient to pay interest rate on a substantial amount of capital and still leave a comfortable income, along with a free house and a considerable portion of the living produced on the farm at low cost; items not without significance to city dwellers in these difficult times.

An Assured Living

Assuming, as seems reasonable, that the flock can be increased by 250 birds and the herd by 4 more cows, the gross income can be raised by about £240 without greatly increasing the operating costs. This represents the goal Mr. Holman has set, and, judging by his progress in the past four years, he seems likely to attain it. Even if he should reach only part of the way to his objective, this would still provide a very comfortable living. Mr. Holman works hard, but he works for himself and is largely exempt from many of the hazards which face the average wage earner. He need never fear unemployment, and at the worst he is assured of a roof and a living.

Possibilities for Right Man

What he has done for himself Mr. Holman is confident can equally well be done by others. By buying wisely—taking care that the land is of good quality and convenient to a market—anyone, he thinks, who is willing to work and to learn can make a good living on a small farm, specialising in whatever branches best suit his natural bent and appear likely to prove most profitable under his special circumstances.

With a pleasant home surrounded by a nicely-laid-out garden, independence, and an assured living, Mr. Holman is greatly to be envied. An inspection of his property and an appreciation of how much he has done in the past four years, however, suggest that he himself is rather an exceptional man. A large farm can possibly afford some margin for inefficiency or lack of enterprise, but the small farmer, unless he is to depend on day work or earn a subsistence livelihood, must be extremely alert and efficient. Decidedly, where the acreage is small, the man counts for more than the farm.

Radio Broadcasts

ARRANGEMENTS have again been made for radio talks to farmers to be delivered from Station 1YA, Auckland, at 7.15 p.m. on each Monday as from March 12. The programme for March is as follows:—

March 12—"The Fields Division and the Farmer," by Mr. J. M. Smith, Acting Director, Fields Division, Department of Agriculture, Wellington.

March 19—"The Value of Cobalt to Pumice Land," by Mr. C. R. Taylor, Fields Instructor, Department of Agriculture, Rotorua.

March 26—"Young Farmers' Clubs' Session," by Mr. T. E. Streeter, Dominion President of the Young Farmers' Clubs Federation.

Weed Control by Kerosene and Sulphuric Acid

(Contributed by Officers of the Fields Division.)

IN addition to the important role they fulfil in this country's primary production effort, Services Vegetable Production areas have proved themselves useful experimental units, on which techniques both orthodox and new have been subject to examination and proof. Weed control among spring-sown seeds may on these large-scale areas become an expensive time-and-labour-consuming operation, just as it is on any market garden with respect to certain slow-establishing crops.

IT is fortunate, therefore, that two herbicides or weed-killers, namely, power kerosene and dilute sulphuric acid, have been found to be worthy of a practicable place in some weed-control operations. Each of these materials has been used successfully elsewhere. In Australia during recent years power kerosene has been applied successfully over large areas of carrots, while this and other petroleum products in the United States are now considered to offer hopeful possibilities in the farmers' struggle with annual weeds. Sulphuric acid sprayed on onions and leeks throughout Britain and North America has become standard practice on many of the larger production units in these countries.

In this country the recent notable success of the treatments which the Department of Agriculture has been applying on areas under its control has been attracting interest, and a short descriptive account of local experience can now be offered with confidence to growers.

KEROSENE FOR CARROTS.

Local trials were based on Australian recommendations that power kerosene be applied at the rate of from 50-80 gallons per acre—the higher rate where the whole area as distinct from rows is covered. These recommendations stipulated spraying carrots about 3in. high, possessing 2 to 4 true leaves. It was believed that carrots sprayed at an earlier stage of growth might be burned, or when sprayed after tap root formation, toward maturity, might acquire a kerosene taint.

Application

With power kerosene at present available in New Zealand the Department has found that application can be made at stages from seedling leaves 1in. high up to the early true or "fern" leaf stage. Most successful results have followed kerosene spraying when seedling carrots have formed two "fern" leaves. At this stage of crop development weeds are usually profuse and dense, both within and between rows, but the effect of kerosene sprayed along rows at this stage is quite spectacular, as the accompanying photographs testify. After 24 to 48 hours most typical weed growth is completely killed, especially fathen, willow weed, nightshade, cress, shepherd's purse, spurrey, and young docks, leaving seedling carrots unharmed and weed free. There is no need to spray the whole area. More economical practice is to spray the carrot rows in an 8in.-10in. band, leaving row centres untouched until inter-cultivation equipment can be used to rid the area completely.

Power kerosene is variable in its content of certain chemical ingredients, especially as these may vary between bulk importations. There is a chance that any particular line may possess properties making it at least slightly injurious to carrots. It is advisable, therefore, to test each drum of kerosene by spraying a short strip of the crop. If results appear satisfactory after 48 hours, the grower can proceed with confidence over the whole area. A certain amount of co-operative experimental work utilising the additional services of chemists and oil fuel distributors is required before individual lines of kerosene can be certified in terms of their effectiveness and reliability as herbicides. In the meantime power kerosene as at present distributed can be used safely, provided the precaution is taken of testing each drum before the whole area is sprayed.

Among other conclusions reached by Departmental officers from their own experience in using kerosene as a carrot spray are:—

1. A higher and speedier death-rate follows treatment of weeds when young compared with mature weed growth.
2. If weed growth is excessive in density or mature in condition, the

WORLD FAMOUS

BRIGGS & STRATTON

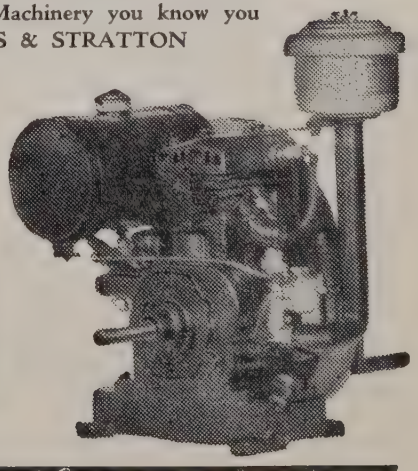
4-CYCLE PETROL ENGINES

ARRIVING SHORTLY!

Not as many as we would like of course—but sufficient to supply Essential Users. It's worth waiting for Machinery you know you can rely on . . . the dependable BRIGGS & STRATTON

Easy starting . . . smooth running . . .
Reliable . . . economical . . .

Don't accept the next best thing. Limited stocks of the unrivalled BRIGGS & STRATTON Engines will arrive shortly. UN-Limited Stocks will be here with the Victory that Briggs & Stratton Engines on the battle front are helping to win.



BROWN BROS Engineers Ltd

Pumping Machinery Specialists,
590J Colombo Street, Christchurch.

Kerosene Treatment of Carrots: The narrow lines are weed-free carrots in the centre of the treatment bands.

Left—A treated area at Levin prior to intercultivation. *Right*—Close-up view on the Levin area.

spray should contact stems as well as leaves.

3. If spraying has been effective, good results should be apparent after 24 hours. It is not advisable to spray the same crop twice.
4. Ideal conditions for a "kill" are provided by calm, dry weather. If rain follows within three hours of spraying, results are unlikely to be good.

Equipment

Both power-driven row-crop and hand-operated spray machines may be used. Spray cones from fixed booms on tractor-drawn machines are usually difficult to adjust, and where crop rows are not perfectly straight patches of unaffected weeds survive treatment on account of poor coverage. It has been found that hand-operated knapsack type sprayers give better control of weeds with greater economy of material used. The aim must be to direct a cone of kerosene along the row in an 8in.-10in. band. At a walking pace knapsack sprayers can be adjusted to apply from 25-35 gallons of kerosene per acre, within which range during the past two seasons excellent weed control on Services Vegetable Production areas has been obtained. On the Hawera area 25 gallons per acre applied by knapsack equipment was more effective than 40 gallons per acre supplied through a Bean row-crop tractor-drawn machine. These dosages relate, of course, to band-row applications, not to complete coverage of any area.

It is to be noted that kerosene damages certain fittings of the equipment, especially the diaphragm rubber band and the spacing washers. The latter, usually made of a composition material, are quickly destroyed. Leather washers on the other hand

Left—A treated area at Hastings prior to intercultivation. *Right*—Another area at Hastings. Centre block completely sprayed with kerosene, compared with untreated rows.

Sulphuric Acid Treatment of Seedling Leeks

On the Levin area. ***Left*****—The rows on the left are untreated and those on the right after sulphuric acid treatment before intercultivation.** ***Right*****—An untreated block in the middle of acid-treated rows before final intercultivation.**

are resistant to damage by kerosene, and should be obtained for replacement. After use all movable fittings should be thoroughly washed in soapy water.

Costs

As an indication of the value of the treatment, apart from its certain success in weed destruction, it has been recorded at Hastings that in a 21in. row spaced crop three men sprayed 4½ acres of carrots in six hours using 32 gallons of kerosene per acre. The total cost of labour and material was approximately £3 6s 8d per acre. A comparable three acres were hand-weeded, occupying 260 female working hours at a total wage cost of £22 10s, or £7 10s per acre. It is thought that four man hours per acre will suffice for the applications on most areas.

SULPHURIC ACID FOR ONION AND LEEK SEEDLINGS.

Onion crops are beset with a similar weed problem to that of carrots already described, and it may be said that the kerosene spray treatment as used for carrots is also fairly successful in controlling weeds among onions.

It has also been clearly demonstrated in other parts of the world that dilute sulphuric acid treatment in controlling annual weeds among onions and leeks is both efficacious and economical.

This acid treatment is being used on Services Vegetable Production areas, and both in terms of weed destruction and economy of cost the treatment can be recommended to growers whose concern it is to attend to large acreages.

Preparation

Use a 10 per cent. solution by adding 10 gallons of commercial sulphuric acid to 90 gallons of water in a wooden cask. Always add the volume of acid to water, **never** water to acid. Stir the solution thoroughly, and it is recommended that for every 100 gallons of spray one pint be added of a wetting and spreading agent, such as a petroleum summer oil.

Application

The Department's method of using sulphuric acid has been in the same manner as kerosene and using similar equipment. The acid material should cost no more than about £8 10s per acre, if the optimum of about 50 gallons is used, and application may be expected to involve about 4 man hours per acre.

Spraying of onion or leek seedlings should be done just after the seedling leaves have straightened. Plants normally suffer a temporary check and scorch slightly, but so long as acid is not applied until after the seedling leaves straighten, these plants, by reason of waxy upright leaves and concealed basal growing points, are able to recover quickly. Most weeds are readily killed, because their flatter leaves catch spray droplets and their growing points are neither ensheathed nor protected by a waxy surface. The photographs depict the value of the treatment among leek seedlings.

Equipment

Special acid-resisting metals are available in Britain and America, where acid treatments are applied to a variety of crops, but these machines are not available for local use. Hand-operated knapsacks are being used without deleterious effect to such equipment, so long as composition washers are replaced by rubber ones, and provided the machine is flushed through with a solution of washing soda in water immediately after use.

With sulphuric acid some precautions are necessary. The recommended spray dilution is not dangerous, but great care must be taken in handling the concentrate. The 10 per cent. strength is corrosive and old clothes should be worn during spraying, also gumboots, rubber gloves, and goggles. Acid should be stored in a cool place and no naked flame should be permitted near an acid container being opened. A solution of water and washing soda should be on hand to neutralise any acid contacting skin or clothing, and, as already emphasised, acid should be added to water in mixing, not water to acid.

Unfortunately the supply of power kerosene during the war period may not be able to meet requirements for carrot spraying in addition to ordinary farm and machine needs. When unrestricted use of kerosene is permitted it is hoped that costs of producing field crops of carrots and onions and leeks will be cut very significantly by adoption of a system of culture, embracing burner treatment of weeds before crop emergence (see "N.Z. Journal of Agriculture," August, 1944), followed by kerosene applications for carrots and acid for onions during crop seedling growth, and a consequent reduction of hand labour and intercultivation to a minimum.

The photographs have been provided by Messrs. I. D. Blair, Lincoln Agricultural College, and G. A. Blake, Department of Agriculture, Hastings.

BRED, FED and RAISED ON WONDER

WORLD'S RECORD PRICE.

The four 5-year-old Southdown ewes depicted above are from the Momopai Stud (W. A. C. Perry Trust). The pen was sold by auction for the world's record price of 530 guineas (180, 140, 110, and 100 guineas respectively).

AS WITH MANY OTHER PEDIGREE FLOCKS AND HERDS **"WONDER"** IS USED CONSISTENTLY BY THE MOMOPAI STUD TO PROMOTE VIRILE GROWTH AND GENERAL STAMINA.

Here is a palatable, balanced and specially prepared mixture that is easily digested and assimilated; that furnishes desirable ingredients to compensate for **poorness of pasture or any major soil deficiency;** that is invaluable as much in cases of malnutrition as in promoting the growth of young animals.

Every consignment that leaves our Factories is Guaranteed to contain:—

Pure Bone Flour	Salt	Potassium Iodide
Sulphur	Limonite	Charcoal
Potash	Sulphate of Iron	Meal
Bone Char	Calcium Phosphate	Molasses
Cobalt	Sulphate of Magnesia	

Petrol restrictions, and the consequent reduction in Travellers' calls, make it difficult to maintain our pre-War service. In the circumstances, **direct** enquiries from old clients and new friends both are welcomed. Prompt attention to all orders is assured.

WONDER
MINERAL STOCK FOOD

Registered pursuant to the Stock Remedies Act.

Manufactured and Distributed by WONDER DISTRIBUTORS, LTD., P.O. Box 129, Feilding.
FACTORIES AT PALMERSTON NORTH, CHRISTCHURCH AND TE AWAMUTU.

Seed Certification

Activities in Ashburton County

SEVENTEEN years ago the Department of Agriculture introduced a scheme for the certification of farm seeds. Commencing with wheat, the scheme has gradually expanded, until today it embraces many of the farm crops of economic importance. Certified lines of the following seeds are now available to the farmer—perennial ryegrass, Italian ryegrass, red clover, white clover, cocksfoot, wheat, browntop, rape, and onions. During the present season three further crops are being included in the scheme, namely, chou moellier, H1 ryegrass, and sweet blue lupins, while seeds of turnips, swedes, and thousand-headed kale are available under the description "Government approved."

By
G. K. McPHERSON,
Instructor in Agriculture, Ashburton.

THE primary object of the certification scheme has been to make available to the New Zealand farmer seed of known origin and purity, so that the general standard of the pastures and crops throughout the Dominion can be improved. Research workers at the Grasslands Division of the Plant Research Bureau, Palmerston North, are continually working on the breeding and selection of high-yielding strains of grasses and clovers. Similarly at the Agronomy Division, Lincoln, selected strains of the more important farm crops are being developed. Upon the seed-producing farmer falls the job of increasing the quantity of these types, so that they can be made available to the farming community generally as rapidly as possible. The certification scheme encourages and supervises the production of these seeds, and thereby protects the purchaser of them against misrepresentation.

Mid-Canterbury is in many respects an ideal district for the production of some of the more important farm crops at present listed under the seed certification scheme and with which this article deals. Experience has shown that much of the medium and heavier type of wheat land is particularly suited to the production of both Italian ryegrass and perennial ryegrass and also red and white clover seed. At one time the production of cocksfoot seed on the Canterbury Plains was confined almost solely to the Eiffelton-Lynnford-Flemington district. Its possibilities, however, as a remunerative seed crop in other localities throughout the county are now being exploited, and it is evident that cocksfoot can be grown successfully over a much wider range of soil types and climatic conditions than was thought possible a few years ago. The suitability of the county for the production of wheat, lupins, and chou moellier seed is well known. Browntop seed production is confined to the strip of high-rainfall country adjacent to the foothills. In addition to the favourable soil and climatic conditions to be found in various parts of the county, small seed production has the added advantage in that in most cases the crops produced can be grown and harvested with the machinery that the farmer already has available on the farm.

During the past few years the quantity of certified seeds produced in the county has, in the case of most crops, steadily increased. This applies particularly to perennial ryegrass and also red and white clover. In the case of cocksfoot seed yields have fluctuated very considerably. Whilst the advantages which accrue from the use of certified seed are now more widely appreciated by the farmer, it is evident from an analysis of the total production figures for the county that there is still a large quantity of inferior types of grass and clover seeds being produced, and at the present rate of progress very many years are likely to elapse before all the seeds produced attain certification standard.

Perennial Ryegrass

This is one of the most important of the small seeds produced in the county. In the 1936-37 season the total quantity of all grades of perennial ryegrass seed accepted for certification was approximately 14,000 bushels. During last year the quantity of all grades tagged and sealed as certified seed had increased to 51,218 bushels. At first glance this may suggest a very satisfactory advance, but when the figures are analysed in detail it will be seen that there remains tremendous scope for further improvement in the quality of the seed being produced. During the first seven months of 1944, for example, 223 lines of ryegrass representing 56,817 bushels were entered for certification under the ultra-violet light test. Of this total 125 lines, containing 35,104 bushels, were accepted for certification as Permanent Pasture seed, whilst the balance of 98 lines, representing 21,713 bushels, failed to reach the necessary standard for certification purposes. Excluding areas sown with Pedigree or Government Stock seed, these figures indicate that almost 40 per cent. of the perennial ryegrass seed produced in the county is below certification standard, due either to contamination with Italian ryegrass or to the presence of too high a percentage of hybrid or false perennial types.

What is the origin of much of this low-grade uncertified ryegrass? Apparently it is a legacy of the days when it was a common practice to sow a mixture of perennial ryegrass and Italian ryegrass in areas which were later to be harvested for seed. Cross pollination of the two types has resulted in the production of a mongrel type of grass seed—without the good qualities of either Italian ryegrass or perennial ryegrass. Good-quality seed is just as easy to grow and harvest as poor-quality seed. Moreover, as pasture improvement is largely dependent on the sowing of good seed, the elimination of the inferior ryegrass types is very desirable. Further, the type of seed mostly in demand today requires a certification tag and seal on the bag, so that there seems little in favour of producing perennial ryegrass seed which fails to reach at least the lowest grade eligible for certification, namely the Permanent Pasture class. The figures quoted above demonstrate that a vast improvement can be brought about, not necessarily by increasing the acreage devoted to ryegrass seed production, but merely by replacing the short-lived hybrid and false perennial types at present being grown by strains of known origin.

Italian Ryegrass

The area of Italian ryegrass harvested in the county during recent years has approximated 3000 acres annually, and of this total some 600 acres or thereabouts has been sown with certified seed. That only about 20 per cent. of the area harvested is eligible for certification indicates the great scope there is for improvement in the type of Italian ryegrass seed being produced throughout the county. Inspection of uncertified Italian ryegrass areas has frequently revealed a considerable proportion of perennial ryegrass throughout. Italian ryegrass is usually sown for a definite purpose—to provide a large bulk of feed during the eight or nine months after sowing. It seems, therefore, that if the seed being used contains an appreciable amount of perennial ryegrass or hybrid types, then the primary object of sowing the Italian ryegrass is to a large extent being nullified.

Crops of certified Italian ryegrass machine dressed last season show that 507 acres have yielded 13,842 bushels of seed, or an average of 25 bushels of seed per acre. As a considerable proportion of this seed was grown on the lighter class of country, the yield per acre can be considered very satisfactory.

Cocksfoot

Cocksfoot for seed production is grown principally in the Eiffelton and surrounding districts, but areas also occur in parts of Wakanui and Methven. In recent years some of the older stands which have ceased to be economic have been ploughed up. It appears that the acreage is being maintained, however, by the sowing down of new areas. That seed yields are influenced to a large extent by seasonal condi-

Just as our Army, Navy and Air Force protect these shores from attack by the Japanese "vermin," so does Gibraltar Board protect N.Z. homes against attack by Vermin, Borer and White Ant.

GIBRALTAR BOARD
The FIRE-SAFE Wall Board
IS VERMIN PROOF

POST FOR FREE BOOKLET!
N.Z WALLBOARDS LTD., Box 395. Auckland.
Please post, without obligation a copy of your Free Booklet. "How to Get the Best Results from Gibraltar Board."
NAME .....
ADDRESS .....
J.A.

Left—Threshing windrowed cocksfoot. *Right*—Threshing windrowed Montgomery red clover.

tions, and possibly by other factors as well, may be seen from an examination of the figures below.

COCKSFOOT SEED CERTIFICATION—ASHBURTON COUNTY.

Season.	Acreage entered for Certn.	Pounds field-dressed Seed.	Pounds machine-dressed Seed.	Average yield M/D. Seed per acre.	Percentage Loss in Machine Dressing.
	*				
1938-39 ..	2,604	618,814	457,335	230	26.0
1939-40 ..	2,258	214,501	155,603	94	27.4
1940-41 ..	1,723	324,882	210,152	132	35.2
1941-42 ..	2,386	218,614	120,731	75	44.5
1942-43 ..	1,884	180,558	88,898	53	50.8
1943-44 ..	2,119	249,640	170,260	119	31.9

* Acreage entered but not necessarily harvested.

The 1938-39 season was a particularly favourable one for cocksfoot seed production and gave to the county not only a record yield of seed, but also a record yield of seed per acre since the inception of certification. As the table shows, during the 1941-42 and the 1942-43 seasons there was a very rapid decline not only in the total quantity of seed produced, but also in the per acre yield of seed. Figures for last season, however, indicated an improvement both in regard to quantity of seed produced and yield per acre.

Cocksfoot is recognised as a particularly valuable grass, especially for dairying pastures in the North Island. Cocksfoot seed is also usually in demand from overseas. For these reasons the maintenance of our cocksfoot areas and the production of high-quality cocksfoot seed appear very desirable.

White Clover

The area of white clover devoted to seed production has shown a substantial increase during the past four years. In the 1939-40 season 74 acres were harvested for seed in the county; in the 1942-43 season the area had increased to 1154 acres, and the present season is likely to show a further increase. In addition to the acreage mentioned, a considerable quantity of white clover seed is produced when harvesting ryegrass areas.

All the white clover seed entered for certification (except that eligible in the Pedigree class) is submitted to the picric acid test, and in the table below details are given of the lines entered during the past five seasons:—

These figures suggest that the farmer is now beginning to realise the value of white clover, both as a valuable herbage plant and also as a remunerative seed crop. Further, the fact that almost three-quarters of the seed submitted for test in the past three seasons has been accepted for certification suggests also that the superiority of certified white clover compared with the ordinary volunteer type is now more widely recognised. Probably no plant offers greater possibilities of improving the pastures of Mid-Canterbury, particularly the wheat areas, than certified white clover.

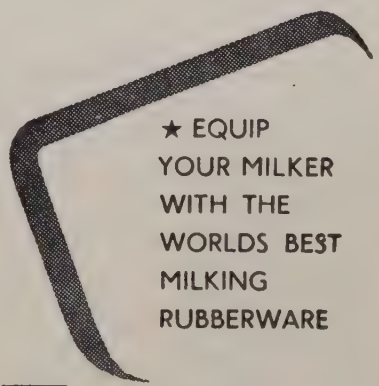
WHITE CLOVER SEED CERTIFICATION—ASHBURTON COUNTY.

Season.	Number of Lines Entered.	Total weight Seed entered. lb	Number of Lines Accepted.	Weight seed Accepted for Certn. lb.	Percentage of seed Entered Accepted for Certn.
1939-40 ..	4	2.033	3	1,093	54
1940-41 ..	42	54,120	21	34,383	63
1941-42 ..	54	58,214	36	42,729	73
1942-43 ..	136	154,000	86	112,420	73
1943-44 ..	145	114,569	107	84,767	74

The majority of the rejected lines of white clover have failed to react satisfactorily to the picric acid test, but cases do occur also where the percentage of suckling clover (*trifolium dubium*) is too high to permit the lines to be certified.

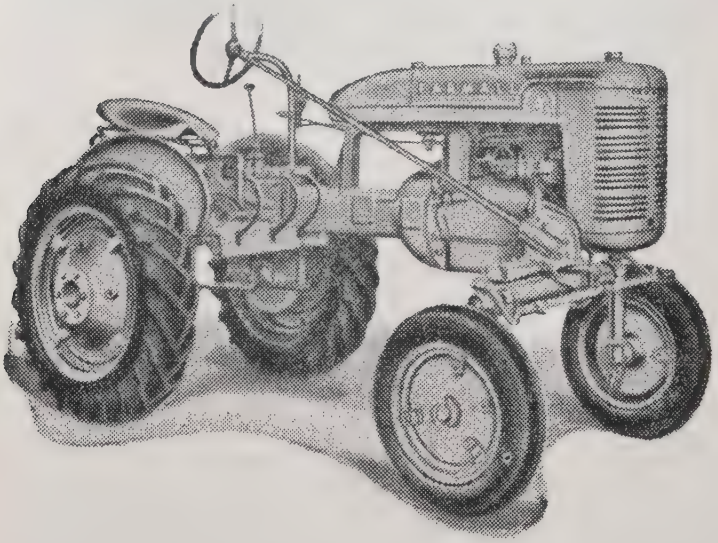
Montgomery Red Clover

In past years Mid-Canterbury has not been a heavy producer of red clover seed. During the six seasons 1935-36 to 1940-41 inclusive the average annual acreage devoted to the production of all red clover seed was only 747. This acreage comprised mainly relatively small areas which had previously been hayed. More widespread sowings of Montgomery red clover over the past three years, however, have had the effect of increasing considerably the total area devoted to red clover seed



Reid-rubber

FARMALLS A and B
AVAILABLE ON RUBBER TYRES



They're the leaders in the two furrow class. They're sturdy, rugged jobs, built like all McCormick-Deering equipment, for years of economical, hard-working service.

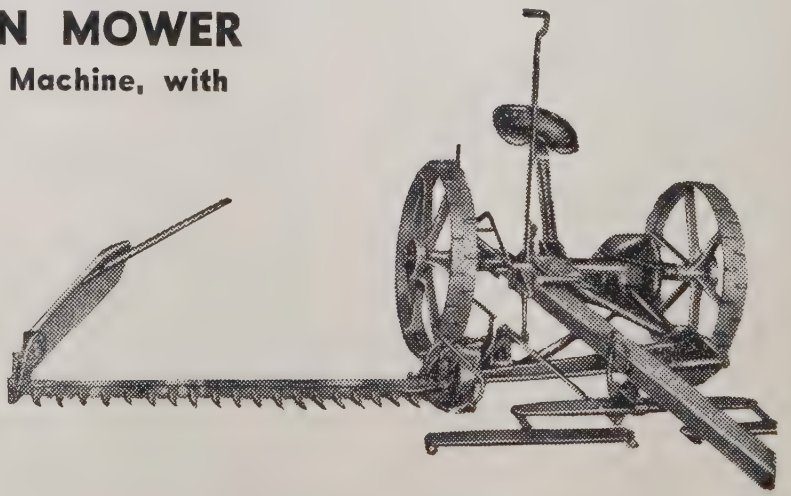
They operate either on Kerosene or petrol and feature 4 forward speeds; replaceable cylinder sleeves; variable governor control; foot operated steering brakes; swinging rear wheels. (Rear only on B.).

The attachments, staunchly made, include Mowers with 5ft. to 7ft. grass bars and 5ft. scrub bars; A435 Cultivators; A192 Ploughs (A only) with single furrow, 12 to 16 inch; Pulley and Power take off attachment; and Hay sweeps.

No. 9 HORSE DRAWN MOWER

A Light Draft, Quiet Running Machine, with 9 Big Features.

1. Steel gears, precision machined.
2. Exclusive Zerol bevel gears.
3. Ball-Bearing transmission.
4. Gears located behind axle.
5. No excessive neckweight.
6. One-piece roller-bearing axle.
7. Latchless levers.
8. Automatic Pitman connection.
9. Draft bracket adjustable to match mower to team.



REGULAR SHIPMENTS OF MOST MODELS OF TRACTORS NOW ARRIVING.

Available from stock:

FARMALL A. & B. and W.4, on rubber.

FARMALL H. & W. 4 (3-furrow) on steel wheels.

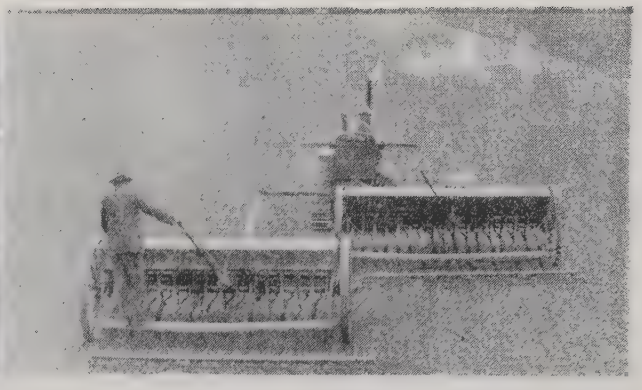
McCORMICK - DEERING, LOW - LINE, LOW VACUUM MILKER.

To: **McCORMICK-DEERING,**
P.O. Box 563,
Christchurch.

Please send me catalogue on FARMALL A
FARMALL B
FARMALL W.4.
No. 9 MOWER
(Mark with an X those interested in.)

..... NAME

..... ADDRESS



Left—A seed crop of certified chou moellier growing in the Wakanui district. *Right*—Drilling certified Italian ryegrass in the Methven district.

production throughout the county. In the 1941-42 season, for example, approximately 1100 acres were harvested for seed, and this had increased to 2217 acres in 1942-43.

Last season slightly more than 1400 acres of Montgomery red clover were entered for certification, so that the position has now arisen where the area of this type of red clover harvested is almost double the total acreage devoted to red clover seed production a few years ago.

Red clover has proved itself an excellent plant for assisting to build up the soil fertility, and on that score alone an extension in the sowings of red clover, particularly the Montgomery red type, would seem justified. Returns for portion of last season show that 549 acres of Montgomery red clover yielded 46,614lb. of machine-dressed seed, or an average of 85lb. of dressed seed per acre.

H1 Ryegrass

This is a new type of ryegrass produced in recent years at the Grasslands Division, Palmerston North. It is the result of cross-pollination between Italian ryegrass and perennial ryegrass, followed by intensive selection work to isolate the plants with the most desirable characteristics. Several experimental areas of this grass have been laid down in the county, some of them extending over a period of almost three years. H1 ryegrass appears to possess good characteristics of both parents. It is extremely palatable and high producing, and indications suggest that it is considerably more permanent than Italian ryegrass, though perhaps less permanent than perennial ryegrass. Last autumn some 40 acres were sown in the county for seed production, so that a limited quantity of certified seed of this new type of grass will be available this autumn for distribution to farmers interested.

Wheat

The object of the wheat certification scheme is to make available to growers sufficient good-quality seed to enable a relatively high standard to be maintained in the varieties of wheat grown for milling purposes. Some varieties of wheat are very susceptible to loose smut, and by continual growing of the line the smut content may increase to such an extent that eventually it will have a very appreciable effect on the yield. Again, under ordinary farming practice it is surprising how quickly varieties may become mixed. Many farmers are conversant with the trouble experienced in direct heading a crop of Cross 7 which contains a fair amount of Solid Straw Tuscan or Fife Tuscan throughout. To maintain the smut content of the commercial lines of wheat at a reasonably low level, and, moreover, to place at the farmers' disposal wheat which is relatively pure, specially-selected lines of all the main varieties of wheat are released from the Agronomy Division or Lincoln College each year as certified seed. This seed is eligible for entry into certification only during the first harvest after its release. Generally most of the Tuscan and the Fife Tuscan grown in the county appears to be of a fairly high standard, but the same is not always true of Cross 7. Some of the crops of this variety contain a fairly high percentage of loose smut or of foreign varieties. The position, however, could be obviated to a certain extent at least if some of the crops of Cross 7 sown with certified seed, but not eligible for re-entry into certification, were reserved for sowing instead of being used for milling purposes.

The area of certified wheat grown in the county annually usually approximates 200 acres.

HEALTHIER LAMBS

Heavier and Brighter Fleeces

That's what greater care for your flock means to you. Improve the general health and condition of your stock by using the well-known *Joseph Ford's Cobalt Drench* and protect against Scour and general unthriftiness. *No starving of stock is necessary.* No need to remove lambs and hoggets from rape, turnips or other feed before dosing.

Joseph Ford's Cobalt Drench

From N.Z. Loan & Mercantile Agency Ltd., or your Stock and Station Agent, or write to the Manufacturers—

LOUDON BROS. LTD., PALMERSTON NORTH

'PLOWMAN'S FOLLY' IS COMING!

The Most Revolutionary and Discussed Book on Farming Practice ever Published!

Written by Ed. Faulkner, a Farmer and Farm Instructor.

Every New Zealand farmer, agriculturist, gardener and orchardist should read this book.

A shipment of "Plowman's Folly" was despatched from New York for me on October 9th, 1944. As only 500 copies are coming (quite a number of which have already been sold) and as it appears unlikely that I will be able to get an Import License for further supplies, to ensure getting a copy, you will need to be in now!

The price is 15/-, Postal Note (or cheque for 15/6), postage paid. You will appreciate that I cannot give you a definite delivery date, but yours will be posted as soon as they arrive. The coupon is convenient for ordering.

MANY THANKS!

I do appreciate the business given to me in 1944—it is my record turnover. I am sorry that I have had to humbug literally thousands of clients with delayed delivery. However, all I can say is I did my best—I have to rely on others for my supplies of various parts, etc., and unfortunately (or should I say, fortunately?) the support given my lines was so great that delays were inevitable.

Now I had best put my cards on the table regarding future supplies.

My stock of spring steel for "BEVIN" Harrows is getting very low—it will be a skinner by February or March at the latest. Replacement stock has to come from Australia. Coal, the essential for making steel, is scarce there—labour troubles seem inevitable—the chances of my getting steel soon are crook—best order your "BEVIN" **NOW!** Many thanks.

"ALBEE"

My new patent agricultural and gardening tool—broke all sales records at his "debut." I got so many orders that the manufacturers had to greatly increase their initial run, and consequently all deliveries were seriously delayed. I am sorry for any inconvenience caused to the many thousands who had to wait. However, everything in the garden is now lovely (thanks to "ALBEE!"), and I can give you immediate delivery. The price is only 25/- and the coupon is convenient! (I will be glad to send your local Storekeeper full particulars of "ALBEE." He is an excellent line for him to handle).

"The Awakening"

based on "Plowman's Folly," costs only 2/6 (postal note, stamps, or 3/- cheque) postage paid. I promise that you will find it instructive, revolutionary, interesting and humorous.

"BEVIN" ELECTROFENCERS

are so popular that I find much trouble in getting adequate supplies. Might I please suggest that if you are interested in electrofencing, you send in the coupon now for full particulars.

To .....

.....

(Fill in the name of your "BEVIN" HARROW Agent or Storekeeper, etc., etc.)

OR

To ALISTER BEVIN (Dept. J.),
Box 880, AUCKLAND, C.1.

Send me.....ALBEES at 25/- each to.....

Post.....copies of THE AWAKENING at 2/6 each

Post.....copies of "PLOWMAN'S FOLLY" at 15/- each.

I attach my cheque for.....
(add 6d. exchange).

NAME .....

ADDRESS .....

..... J.A. 2/45

Alister S. Bevin

Patentee and Distributor of the "BEVIN" HARROW (Patent No. 71631) and the "ALBEE" (Patent No. 89147).

38 ALBERT STREET,
AUCKLAND, C.1.

To ALISTER BEVIN (Dept. J.),
Box 880, AUCKLAND, C.1.

Please send me particulars of your
"BEVIN" HARROW
"BEVIN" ELECTROFENCER
(Strike out which not wanted),
and a copy of your **Money-Back Guarantee.**

NAME .....

ADDRESS .....

..... J.A. 2/45

Chou Moellier

In common with other brassica crops chou moellier seed has now been produced locally for several years, and some 150 to 200 acres are grown annually in the county for production of certified seed. For seed purposes chou moellier is usually sown in early December and harvested in late December of the following year, so that the crop occupies the ground for approximately 13 months. Two types are now being grown, namely, certified giant and certified medium stemmed, and seed of each of these types is available to farmers for sowing for the first time during the present season.

Seed crops of chou moellier have been grown over a wide range of soil types and climatic conditions throughout the county, and yields of seed have averaged about 3cwt. per acre.

Browntop

As mentioned previously, browntop seed production is confined to the strip of high-rainfall country bordering the foothills. Some farmers harvest this seed by direct heading; others use strippers. Seed yields vary very considerably from year to year, depending on seasonal conditions. Individual producers of browntop seed usually harvest extensive areas. Moreover, it frequently happens that portions of paddocks, the areas of which are difficult to assess, may not warrant harvesting. In view of these facts it is difficult to arrive at reliable seed yields from the browntop areas.

Conclusion

A detailed analysis of small seed production in Mid-Canterbury indicates that there remains very great scope for improvement in the type of small seeds being produced. Much of the perennial ryegrass seed harvested is of a poor hybrid type or is mixed with Italian ryegrass. Similarly a great deal of the Italian ryegrass seed harvested is inferior in quality or contains an admixture of perennial ryegrass. Many acres of red clover and of white clover reserved for seed production fail to reach certification standard. Without reducing the acreage devoted to wheat, without sacrificing any acreage for peas or any other crops, without reducing the number of sheep and cattle carried, Mid-Canterbury could almost double its production of certified seeds simply by replacing the inferior types at present being grown by selected seeds of known origin. This year the production of certified seeds alone is likely to return to the farmers of Mid-Canterbury a sum approximating £100,000. Records show that this amount could be increased very considerably by producing in greater quantities the type or grade of seed mostly in demand today.

Members of N.Z. Wool Board

Members of the New Zealand Wool Board. Standing, from the left, Messrs. A. Greig, secretary to the Minister of Agriculture, H. B. S. Johnstone, N. R. Jameson, chairman, W. Horrobin, deputy chairman, and H. J. Wardell. Seated, the Hon. B. Roberts, Minister of Agriculture, Messrs. G. A. Duncan, A. B. Moore, D. C. Aubrey, J. D. Revie, H. M. Christie, and E. J. Fawcett.

THE Minister of Agriculture (the Hon. B. Roberts) announced recently that the Governor-General had appointed the following members to the New Zealand Wool Board:—

Government representatives.— Mr. David Charles Aubrey (Wanaka), Mr. Hubert Maxwell Christie (Wellington).

Woolgrowers' representatives.—Mr. Walter Horrobin (Waikanae), Mr. Noel Rutherford Jameson (Onga Onga), Mr. Harry Bell Spearman Johnstone (Otaio), Mr. Arthur Briscoe Moore (Whangarei), Mr. John Duncan Revie (Crookston), Mr. Henry John Wardell (Omarama).

In addition to the above there are two associate members appointed under the Act, the Director-General of Agriculture (Mr. E. J. Fawcett) and the Director of the Export Division of the Marketing Department (Mr. G. A. Duncan).

The woolgrowers' representatives were elected for appointment at a meeting of the electoral committee of the Meat Producers Board. The Minister added that the Wool Industry Act, 1944, came into operation on January 11 by proclamation. The first meeting of the board was held in Wellington on that day.

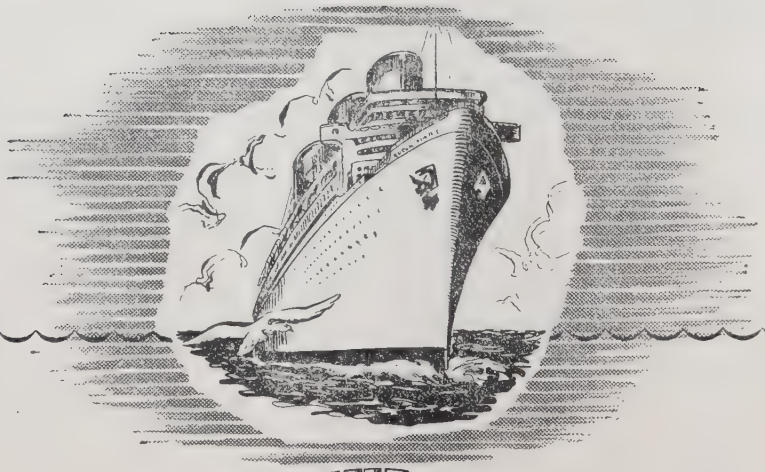
Mr. Jameson was elected chairman and Mr. Horrobin deputy chairman.

WHEAT PRODUCTION 1945-46

OWING to the acute shortage of wheat, a publicity campaign is in progress to encourage the production of New Zealand's own requirements of this commodity. Arrangements are being made for Ministers of the Crown, members of Parliament, and prominent farmers to make statements in the Press and broadcasts, and advertisements will also be featured. The price to be paid will be based on acreage planted as follows:—200,000 acres or under, 6/6 per bushel (March Tuscan basis); for every additional 5,000 acres up to 220,000 acres, 1d. per bushel extra; for every additional 5,000 acres up to 250,000 acres, ½d. per bushel extra.

CONTROL OF GUMBOOTS

ALTERATIONS to the control of knee gumboots have been instituted by the Ministry of Supply by which releases for primary production purposes may now be authorised by secretaries of Primary Production Councils and by the present certifying officers mentioned on the gumboot application form. This modification does not mean that stocks of gumboots are plentiful; the supply position overseas is still difficult, and all available stocks must be husbanded to meet essential needs. The new arrangements do not apply to thigh gumboots, as present stocks are very small and are being reserved for highly essential purposes.



IT'S THE BEST

"Queen Mary," pride of British shipbuilders, proof that Britannia still rules the waves. And Best paints prove their worth when quality counts. If you want nothing but the best, you'll naturally choose **Crescent** paints for every purpose . . . for protection . . . for economy . . . for beauty . . . for permanence. Best paints include **Raytex,** too, superior to enamels, and first choice for colourful, high-gloss beauty in modern interiors. Whatever you need in paint, varnish, enamel—your best choice is "Best"!

CRESCENT • RAYTEX • MADE BY BEST PAINTS LTD. • OBTAINABLE EVERYWHERE

Crop Subsidy Scheme

£5 AN ACRE FOR WINTER PIG FEED

THE urgent need for pig meats means that a considerable number of pigs, apart from breeding stock, must be carried through the winter. This brings into prominence the necessity of having feed other than dairy by-products when these are in short supply.

The growing of about a quarter of an acre of good roots—sugar beet, mangolds, carrots, or swedes—for every sow kept, with the object of filling in this gap, cannot be ignored if pig production is to be increased or present production maintained.

The crop subsidy scheme of £5 per acre for winter pig feed, introduced by the Government and administered through the National Pig Industry Council, with the object of encouraging farmers to grow their own feed requirements, has not been taken full advantage of, judging from the applications so far received.

The wide publicity given during the past eight months to the serious position of imported stock feeds should have provided the incentive for claims under this scheme.

Of the 42,000 pig producers only 918 have applied for crop subsidy, and with a fall in production of 20,000 carcasses over the past three months the prospect of reaching last season's production is indeed doubtful.

There is an urgent need for greater effort if New Zealand is to maintain its obligations to the Allied Armed Forces. It is to be hoped that before the closing date—March 1—many more applications for crop subsidy will have been received.

The position at January 26 is set out hereunder, giving the number of applications submitted from each District Pig Council, enumerating the kind of crop grown, and showing the acreage involved.

District.	No. of Applications.	Acres in—													Total Acreage.
		Carrots	Kumikumi.	Pumpkin.	Piemelon.	Barley.	Sugar beet.	Silver beet.	Mangolds.	Swedes.	Artichokes.	Chou moellier.	Peas.	Maize.	
Auckland ..	92	5¾	14½	39½	—	5	11	1¾	6	180	4	15	3½	135¾	421¾
Bay of Plenty ..	93	27½	181¾	45	—	28½	14½	—	4	196¾	8½	23	12½	346	887½
Canterbury ..	102	5¾	—	3	—	344½	10½	4½	52¾	92	13½	25¾	85½	—	636¾
Northland ..	79	9	10¾	47¼	¼	5	3¼	35½	2½	169½	16	33¾	2½	144	479¼
Otago-Southland	42	6½	—	—	—	140	1	—	29¼	78	—	11¼	6	—	272
Tairawhiti ..	145	13¾	43½	192	—	55	35	1½	24¾	20	8	14	1½	247½	656½
Taranaki	62	13	2½	7	—	12	16½	1¼	6¾	56½	18½	19½	17½	6½	176¾
Waikato ..	196	47½	112	40¼	½	111¾	20½	—	9½	288½	14½	62¾	27½	121¾	856¾
Wellington ..	107	14¼	—	2	—	144	28	—	16½	114¾	½	51¼	54	5	430
Grand Totals ..	918	143	365	376	¾	845½	139½	44½	151¾	1,195¾	82¾	256¼	210¼	1,006	4,817

A SPECIAL FINANCIAL SERVICE TO FARMERS

MORTGAGE INVESTMENT DEPARTMENT

The business of farming calls for looking and planning ahead. The building of a herd, the development of a farm are measured in periods of years—not months. No one realises this better than the Dominion Life Office. The services which they offer the farming community have been planned to be of continuing and permanent assistance.

The Mortgage Investment Department offers first mortgage finance on approved farms. And it makes this finance available for really long terms . . . for twenty or thirty years ahead.

In this way farmers can plan for their financial future on a long-term basis, paying back a little every year. Furthermore, the favourable interest rates that prevail today can be assured for the future and yearly outgoings reduced. The securities can be prepared by the farmer's own solicitor.

But the Mortgage Investment Department is prepared and equipped to advise on problems other than purely financial. Write to the Mortgage Investment Department of the Dominion Life Office for their advice. It entails no obligation. And you can put your trust in their financial judgment because that is their job—as farming is yours. And remember the Dominion Life Office, the farmers' friend, is the only purely all-New Zealand Life Assurance Company.

DOMINION LIFE OFFICE

THE DOMINION LIFE ASSURANCE OFFICE OF NEW ZEALAND LIMITED.

Head Office: N.Z. Insurance Bldg., Featherston Street, Wellington.

General Manager: EDW. ESDAILE.

THE ALL-NEW ZEALAND OFFICE.

THE FORCES MUST BE FED

THERE is one crucial battle underlying all the feats of allied arms—a continuing battle which will reach its very peak of intensity in the years of liberation, and in which half-hearted efforts today can well jeopardise the peace for generations to come. In this battle, the Battle for Food—New Zealand has the great responsibility of a great producer of meat and dairy produce. Amongst these "protective" foods, pig meats hold a pre-eminent place, being not only high in general nutritional values but probably the highest available general source of many "B complex" vitamins now known to be essential for good health. And in addition to Pacific needs, supplies to Britain will help New Zealand bacon producers to establish their right to a share of the market when *other* countries are again seeking outlets in Britain. So once again the Tomoana Baconer Competition emphasises the need now for quantity, quality, and suitability of type.

ENTER THE TOMOANA BACONER COMPETITION

£400 IN PRIZES

Eighty-one prizes, totalling £400, and including £50 for the North Island Grand Championship, will be awarded for the best line of four pigs each not exceeding 120 lbs. live weight as at February 28th, 1945, the final date for receipt of entries.

EVERY FARMER CAN ENTER . . . ANY FARMER CAN WIN

For full particulars and entry forms apply to

W. & R. FLETCHER (N.Z.) LTD.

(Local Representative), or write P.O. Box 17, Auckland; P.O. Box 663, Wellington; P.O. Box 105, Hamilton; or ask your District Pig Council Supervisor.

TB.3.24

VETERINARY NOTES

Vaginitis as Possible Cause of Temporary Sterility in Cows

Contributed by The Livestock Division.

DAIRY farmers experience an occasional season when their herds will not settle to the bull. There are many theories regarding the actual cause of the delayed conception in some seasons. It is very dangerous to be dogmatic about the problem, as preconceived ideas may be completely upset when a careful examination of the herd is made.

When a large percentage of the herd has failed to settle the suspicion will naturally fall upon the bull. If this member of the herd is found to be not responsible for the failure, then the main attention is directed to individual cows. The reproductive organs of the cow are subject to a number of diseases which may render breeding difficult or impossible. As reproduction is so closely linked to production in regard to dairy animals, any failure in reproduction at the proper season of the year is a great blow to production.

Undue delay in breeding may upset the following season's output to a major extent, as proper use is not made of the pastures at their most nourishing and stimulating stage. In fact, in cases of undue delay it has been accepted that it is better to milk the herd right through and endeavour to bring the breeding programme up to date after missing a breeding season.

The following is a detailed reference to vaginitis as a possible cause of temporary sterility in herds.

Vaginitis is a disease of frequent occurrence in this country, and has often been regarded as the chief cause of cows failing to hold to the bull. While such a condition, more especially in acute cases, cannot be ruled out, investigations have failed to show that this is always the case. It would appear that vaginitis is only a minor factor in temporary sterility.

Prevention is difficult, as some cases appear to occur spontaneously, and the disease does not generally produce any systematic disturbance.

Detection of Disease

Clinically, the most important symptom of vaginitis is the apparent non-holding of the cow to the bull and the returning again and again at irregular periods. If such a condition should arise, an examination of the vaginal passage should be made immediately. This is done with the cow standing in the bail. The external lips of the passage (vulva) are retracted with the fingers, and the condition of the interior noted. The healthy membrane is of a rose-pink colour, with a smooth, glistening surface. When inflamed, it presents a red, deeply-congested appearance, while on the surface may be observed small elevations, often not larger than a pin-head, which feel to the finger like grains of shot under the membrane. Occasionally, a small ulcerated patch may be seen, and very often flakes of a pus-like discharge are present. The part is intensely irritated, and the cow generally resents the manipulation. According to the nature of the eruptions, "vesicular," "granular," and "nodular" forms of the disease have been described, but for practical purposes of treatment these do not require differentiation. In making the examination, the hindquarters of the cow should be exposed to a good light. If in a dark shed, an electric torch is useful, as the condition may readily escape observation if looked for in a bad light.

Vaginitis may assume either an acute or chronic character. The long-standing cases present the most difficulty in treatment. In these cases no importance is attached to the persistence of the small granules or nodules on the mucous membrane in so far as sterility is concerned. Adhesions occasionally form between the walls of the vaginal passage, and it is likely that in old cases the lining of the womb itself becomes involved. The desire for the male in affected cows appears to arise from the irritable condition set up, and is not the result of true "bulling."

Vaginitis is commonly seen in in-calf cows, and this point may explain (in some cases at any rate) the reason why a cow having conceived at the first service takes the bull perhaps several times subsequently. Heifers are frequently affected, and where vaginitis is found to exist in a herd the heifers (if any) will usually be noticed to be the worst cases.

The bull seldom escapes infection, but it is rarely that any symptoms noticeable to the casual observer are present. Cases have been seen, however, showing marked swelling of the sheath and a slight discharge from the preputial opening (it is sometimes referred to as balanitis in the bull), but, as before stated, those acute symptoms are exceptional. Unfortunately, the disease in the bull does not prevent his attentions to the cows, but tends rather to increase his activity in that direction.

Method of Spread

Infection is most commonly spread by the bull. Having served an affected cow, and becoming himself infected, he is capable of transmitting it to every cow which he afterwards serves. It is also possible for a diseased cow standing in a bail to switch some infective discharge from her tail on to the hindquarters of her neighbour and so infect the latter. During treatment the tubing used in irrigating an affected cow must be disinfected before again using. The same applies to the hands and fingers of those making an examination.

Treatment

Cure is not difficult if the cases are observed early. Much harm is done through the condition not being recognised and strong antiseptic douches being used, which tend only to aggra-

• JERMOL •

The cold pressed wheat germ oil, rich in Vitamin E, helps to

INCREASE FERTILITY; REDUCE STERILITY

in CATTLE, HORSES, SHEEP, PIGS, POULTRY.

JERMOL also reduces very considerably the risk of abortion.

Obtainable from all Stock Agents or from the sole N.Z. Manufacturers:

D. H. BROWN & SON Ltd. MOORHOUSE AVENUE, CHRISTCHURCH, C.1.

When it's

General Flock Drenching

THEN IT'S PREMIER PRODUCTS

Giesens

Carbon Tetrachloride Drench and

Suttons

Nicotine Bluestone and Cobalt Drench.

Authorities everywhere recognise the ingredients of these worm remedies as highly efficient in expelling the most prevalent types of worms affecting sheep in New Zealand.

And farmers everywhere have recognised the worth of Giesens and Suttons by making them among New Zealand's most popular drenches.

Used alternately as "General Flock Drenching" they give wide protection at low cost.

For efficiency administer with Elliotts Automatic Drenching Gun or Elliotts Pistol Drencher.

Full details on application from

PREMIER PRODUCTS LTD.,

HUDDART PARKER BUILDING, WELLINGTON.

AGAIN AVAILABLE—ELLIOTTS DRENCHING PISTOLS & VACCINATING SYRINGES

Elliotts Instruments are quicker —easier and more economical to use. They cost less too and are constructed of special bronze to withstand corrosive action. Elliotts Instruments are obtainable everywhere or from Premier Products Ltd., Wellington.

ELLIOTTS AUTOMATIC DRENCHING GUN—£6/15/—complete with container, rubber tubing, straps, cock and carrying case. Dose Range, 5 c.c. to 1 fluid oz.

ELLIOTTS DRENCHING PISTOL—£1/19/6 (as illustrated). Dose range, 5 c.c. to 1 fluid oz.

ELLIOTTS COMBINED HYPODERMIC AND DRENCHING SYRINGE—35/-. Dose range, 2½ c.c. to 10 c.c.

vate the already inflamed state of the membrane. The first essential in treatment is to remove the bull (if running with the herd), and to separate affected from healthy cows. Cows under treatment must be kept from the bull for a period of at least six weeks, otherwise treatment is useless. Lime washing and disinfection of the shed should be carried out. The vaginal passage of affected cows must be irrigated with mild antiseptic and astringent solutions; strong antiseptics do more harm than good. The following solutions are recommended:

Boric (boracic acid), in the strength of 2 teaspoonfuls to a pint of water.

Solution of ordinary salt in water (normal saline solution), made by dissolving one dram (teaspoonful) of ordinary salt in a pint of boiled water.

Permanganate of potash, using one teaspoonful of the crystals to the gallon.

Sulpho-carbolate of zinc, in the strength of one teaspoonful in a quart of water.

All water used in making any of the solutions must be first boiled, and used at blood-heat when irrigating. A quart of solution is sufficient to douche one cow. A piece of rubber tubing about 18in. long, to which a funnel is attached, is the best means of introducing the fluid. There is no necessity forcibly to flush the passage by the use of a strong syringe. After insertion into an affected cow the tubing should be placed for a few seconds in boiling water before again using. For irrigating the bull's sheath an ordinary bulb enema syringe with vulcanite nozzle can be used.

The best results have been obtained from the use of sulpho-carbolate of zinc. The quantity mentioned (one teaspoonful in a quart of water) should be used to wash out the vaginal passage once daily. This must be continued for a fortnight. At the end of this time it is advisable to change the solution, going on to the permanganate for a week, and finishing up by a week's use of the salt solution.

It is found in practice that this plan of varying the solution used is useful. Experience also shows that one month's treatment is usually necessary to cure the disease, and in bad cases even longer. However, with a little patience and intelligent care it will be found that vaginitis can be cleared out of the herd, whereas neglect in treatment may result in serious economic loss.

Answer to Correspondent

Calf Disorders and Feeding of Concentrates

"M.M.," Bay of Islands:—

Recently I lost an apparently healthy calf, and my neighbour has lost one and had another sick. He has been feeding a variety of linseed, and as soon as this was stopped the sick calf recovered. I had fed a concentrate also, though a different one. Could I send a sample of the feed to a Government analyst or someone to know whether it is wrong in some way? My neighbour is an experienced hand with calves, and my calf had every care.

LIVESTOCK DIVISION:—

Young calves are very susceptible to digestive upsets, and for the first month of their lives should be fed on milk only. After this age a little concentrated food can be gradually added to their milk ration, but the concentrates should be of the highest quality and care taken that the calves are not overfed. When farmers commence feeding concentrates they are apt to give the calves too much. This often gives rise to digestive troubles, leading to very serious complications in the young calves, owing to their comparatively delicate digestive systems. If it is found that calves become sick when concentrates are fed to them, the logical conclusion is to discontinue the use of the extra food for the time being.

Some of the stock food mixtures at present on the market are quite unsuitable for calf feeding, and only approved concentrates should be used in quantities specified by the manufacturers.

Analysis of concentrates is an expensive undertaking, and under the circumstances mentioned by you is hardly warranted. I should think that there is a possibility of the meals used being unsuitable for calf feeding. If you sent samples to the local office of the Department of Agriculture an opinion would be given regarding their suitability or otherwise for use as calf foods.

DELAYS *are* DANGEROUS

EFFECT That POLICY

with the

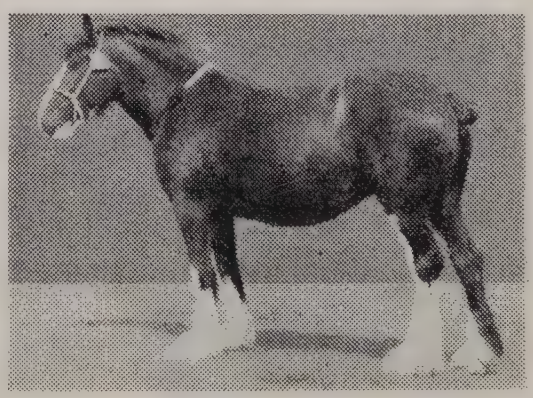
GOVERNMENT LIFE

TO-DAY

Combat Infection with 'DETTOL'

Read this Report:

"A mare in foal had a very bad leg abscess. This was cut open and the pus rapidly discharged. The abscess was then syringed with a solution of Dettol, and the horse rapidly showed signs of improvement and got better quickly."



'DETTOL' gives you ALL these qualities—

- Non-poisonous
- Non-staining
- Phenol Coefficient 3.0
- Does not hurt
- Pleasant Odour
- Gentle to Animal Tissue

A FREE BOOKLET, "Dettol in Veterinary Practice," will tell you of this new antiseptic and how to use it for the safe relief of many distressing conditions.

Write to Reckitt & Colman (New Zealand) Ltd. (Pharmaceutical Dept.), Bond Street, Dunedin.

'DETTOL'

TRADE MARK

THE MODERN ANTISEPTIC

As supplied to the Royal Veterinary College, London

1945-46

PRIMARY PRODUCTION PLAN

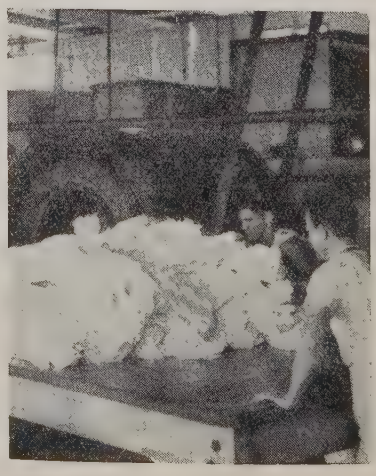
THESE ARE THE TARGETS SET

Wheat - - -	300,000 ac.	Butterfat - - -	190,000 tons
Oats (threshing)	60,000 ac.	Pig meat - - -	50,000 tons
Barley (malting)	38,000 ac.	Other meat -	430,000 tons
Barley (feed) -	40,000 ac.	Linen flax - - -	20,000 ac.
Maize - - - -	12,000 ac.	Potatoes - - -	37,500 ac.*
Peas - - - -	35,000 ac.	Onions - - -	2,000 ac.*

* Subject to confirmation before the planting season.

The targets set are vitally necessary and can be attained only through every farmer planning his production to this end.

The individual effort will assure the total objective.



SEASONAL NOTES

Production Plan for 1945-46 Season

PREPARATION of the land for autumn-sown wheat and other cereals should receive attention when harvesting does not demand full employment of labour and horsepower at the disposal of the farmer. As soon as crops have been harvested or fed off on land intended for wheat or other cereals the soil should be deep ploughed. Subsequent cultivations should ensure that the ground is in good order for drilling—that it is fine and firm below with small lumps brought to the surface. Generally harrowing with heavy tines follows the initial deep ploughing, followed by the cultivator, which delivers the clods to the surface, where they may be dealt with by harrows and the roller. Two ploughings may be necessary on recalcitrant soils. Land previously in pasture which has been surface cultivated throughout the summer may now be deep ploughed if the turf has been sufficiently decayed and distintegrated, when further cultivations on the lines indicated above should proceed.

It is late, though not too late, to prepare lea land which has not yet been surface worked for wheat. The land should be skim ploughed immediately and left about three weeks for the turf to smother, double disced till the turf is broken up, deep ploughed as soon as discing is finished, and worked down to a firm and fine seed-bed.

Grain for Threshing

Farmers are fully aware of the imperative need for New Zealand to maintain herself as far as possible in regard to all foodstuffs, and particularly is this important as far as wheat is concerned, for it is the main food for our people. The target for 1945-46 for grain for threshing is as follows:—

Wheat	**300,000**	**acres**
Oats	**60,000**	**"**
Barley (malting) .	**38,000**	**"**
" (feed) ..	**40,000**	**"**

The feed barley and maize should be grown as far as possible near or on the farms where they will be consumed. Our transport system is already carrying a big load, and it is important that cartage should be saved as far as possible.

If all farmers will attempt to grow a few extra acres, and, in particular, if farmers with suitable land and facilities will help the programme by growing what they can, there is little doubt that the production plan will be achieved, despite manpower difficulties. In spite of the war the number of agricultural tractors and threshing machines on farms has increased tremendously, as the following figures reveal.

	1933.	1938.	1939.	1940.	1941.	1942.
			(numbers)			
Agricultural tractors ..	4,972	8,031	9,639	11,278	12,516	13,967
Threshing machines ..	576	675	740	873	967	1,129

Even although during the past two years there have not been sufficient tractors and threshing machines to meet all demands, there have been sufficient to replace worn-out machines. It will therefore be readily seen that the machinery position on farms as it affects the growing and threshing of cereals is much better than prior to the war, and should offset to a considerable extent the shortage of permanent and casual labour.

Other Crop Targets

In addition to cereal crops farmers are being asked to grow the same acreage of potatoes, onions, peas, and linen flax as requested last year. Last year the requirements in these crops were approximately met, and it is hoped that farmers will plant a similar area in the 1945-46 season.

The cows wintered well last season, owing to an abundance of hay, and this has been reflected in increased production this season. Unfortunately the weather conditions have made hay harvesting difficult this year, but sufficient should be saved to meet the demands for the still further increased output that is required next dairy season.

Farmers should have availed themselves of the pig crop subsidy scheme, so that pig population will increase and winter litters be well forward to take full advantage of supplies of separated milk available next spring, so ensuring production of 50,000 tons of pig meat in 1945-46.

New plate groups to replace worn Delco and other make cells from 10/-. Guaranteed 2 years, supplied to fit any make glass or rubber jars. State make, number plates per cell, dimensions of jar.
Rokfire Electric Batteries Ltd.
Box 66, Petone.

Pasture Establishment

THE ground for autumn-sown pasture should now be in a forward condition for sowing. On the colder, heavier soils and in the colder climates sowing should take place this month, if not earlier, to take full advantage of the effect of the warm autumn rains to follow, so that the pasture is well established before severe frosts appear or the ground becomes sodden and cold. If the ground is not ready and sowing has to be delayed unduly, there is danger of poor establishment on such areas, particularly of the clovers. The ground may at the present moment be dry and dusty, but as long as it is firm and fine enough sowing should proceed. If rain does not fall for some time, no harm is done, for if the ground has been lightly harrowed after sowing to cover the seed, most of the seed will still be there despite attention from birds. If ample rains do fall early in the autumn, a good establishment is assured. If light rains fall, provided the bed is well prepared, the germinating young plants will survive periods of dry weather. Fortunately all the seeds do not germinate at the same time under such conditions, and even if some of the young plants die, there are ungerminated seeds which will provide plants to take their place. Of course on lighter soils in the milder climates there is no need to sow very early in the autumn, and this operation may be delayed with safety till the period when the autumn rains normally fall in adequate amounts.

Quality, Not Quantity

In choosing the seed mixture farmers should remember that quality is of more importance than quantity. Farmers may be deterred from buying good-quality seeds because of price. All seed should be purchased on purity and germination test. If this test is applied to the seed on offer, the cheap seeds often are revealed to be poor buying, because they contain so much impurity and are of poor germination.

The merchant usually buys his seed on purity and germination, and will be able to show his farmer clients the test of any line he sells. The farmer should check such tests by sending samples of any lines in which he is interested to the Department of Agriculture's Seed Testing Station at Palmerston North for test of purity and germination, a service which is given to him free of charge.

Even if the cheap line of seeds passes this test and the effect of introduction of more weed seeds is ignored, it may fail in other respects. Besides the importance of purity and germination the farmer should see that he sows varieties and strains which suit his purpose. For winter feed and early production pure Italian ryegrass is better than a mixture of false perennial Italian and perennial ryegrass. Very poor results usually follow sowing false perennial ryegrass instead of true perennial in permanent mixtures. Thus the cheap line may fail the farmer in respect of type. For perennial ryegrass, Italian ryegrass and white clover this can be checked at the Seed Testing Station at the time tests are being made for purity and germination.

Very occasionally a cheap line of seed produces good results. A success of this kind does more harm than good, in that it tempts the farmer and his neighbours to buy cheap lines of seed, usually with unfortunate results. If a farmer is tempted to buy such a line, let him submit it to the Seed Testing Station for test of purity, germination, and type in regard to the white clover and ryegrass. The report will usually convince him of the folly of purchasing the line and that his money is better expended on a smaller sowing of good-quality seeds.

SUBSCRIPTION RATES

Subscription 2/6 a year; overseas subscription 5/-. Payable at any office of the Department of Agriculture or to Publisher, Box 3004, Wellington.

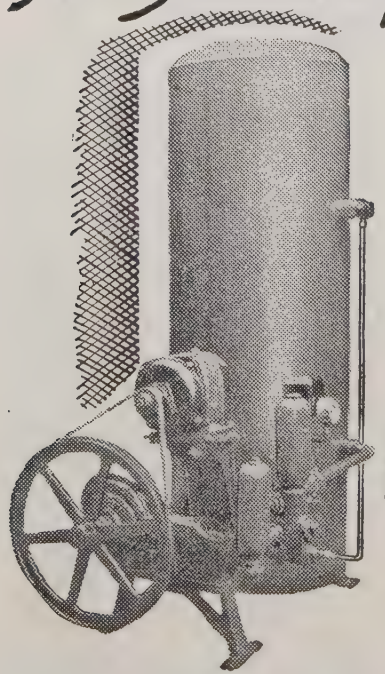
Waste Areas

TIME and labour permitting, the farmer should survey waste areas on his farm with the object of making fullest possible use of every acre. He is often deterred from exploiting such areas by concern as to the work involved. There are many methods of replacing waste areas by pasture, some involving hard work, whilst others may occasion less effort. Thus wet areas may be drained to suit them to the growth of dryland pasture species, or they may be colonised by grass suited to wet conditions. Much effort in drainage is involved in the first method, while the other entails very little work. Which method will be the more effective in raising production is dependent on the state of the remainder of the farm.

Easy methods which can be followed even on unploughable country to eradicate gorse, blackberry, and fern have been described in numerous issues of the "Journal of Agriculture." These easy methods require intelligent application to suit different conditions, and mainly hinge on the use of animals—cattle, sheep, and goats—to do most of the work, followed by the slasher and grubber. The slasher, the axe, and fire are usually first employed, assisted on ploughable country by cultivation to obtain a seed-bed for pasture establishment. The taller and thicker the growth the better the seed-bed, and the better the seed-bed the better the grass establishment. Besides this the taller and thicker the growth the fiercer the fire and the greater the destruction of the original cover. With gorse particularly it pays to wait until the plants are old before commencing operations. Victory is not won until the pasture fills out and makes a complete cover and all vestiges of the old plants are gone.

For over sixty years Renown has been the New Zealand farmer's guide to dependable...

WATER SERVICE



Ever since the first Renown Pump was built Renown equipment has maintained the same high standard of trustworthy quality, performance and reliability; so that today, as in years of long ago, you may purchase Renown Pumps with full confidence that you are buying the best.

RENOWN PUMPS

& AUTOMATIC PRESSURE SYSTEMS
Are Manufactured By
W. H. PRICE & SON LTD.,
34-36 Manchester Street, Christchurch.
Established 1879.
Stockists in all Centres.

POST THIS COUPON

W. H. PRICE & SON LTD.,
P.O. Box 1084,
CHRISTCHURCH.

Please send me full particulars of "RENOWN" Pumps and Automatic Pressure Systems.

NAME .....

ADDRESS .....

.....J.A.

Topdressing

THE export of animal products from New Zealand has grown apace since the beginning of the present century. Expansion was rendered possible by the introduction of refrigeration, and there is no doubt that the production increase has been assisted to a considerable extent by the practice which has expanded during the same period of topdressing pastures with minerals—lime, phosphates, and, to a minor extent, potash. During the last 25 years the value of these topdressings has been closely investigated by the Fields Division of the Department of Agriculture, and a considerable amount of valuable data has been gathered for the information of farmers.

These investigations have encouraged the farmer to extend his topdressing programme, because they showed that responses were to be obtained on almost all soils in New Zealand except in the extremely rich or very dry areas. By judicious topdressing land low in humus and naturally poor in fertility, which would normally grow sparse herbage, has been made to produce first-class pasture, and to an increasing extent the soil has been enriched in humus resulting from the extra growth of grass being consumed and returned to the soil as animal manure. After years of topdressing what was poor soil is now reasonably fertile soil.

Fertiliser Needs of Soils

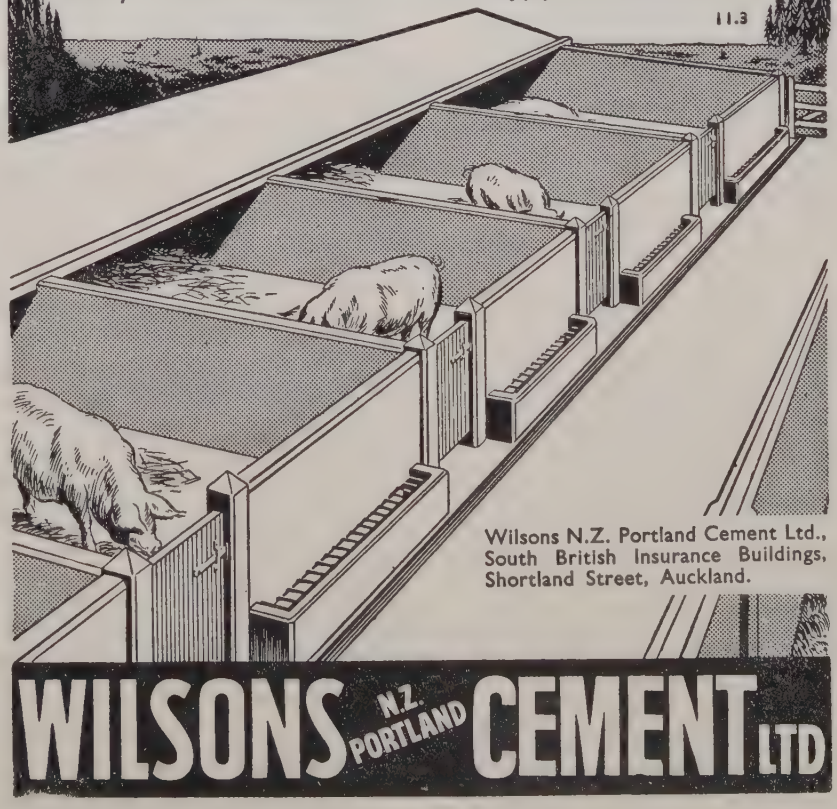
On some soils phosphates alone gave responses, in others lime was required in addition, whilst a few required potash. The fertiliser need of any soil depends on its origin and to a great extent on the degree of leaching to which it has been subjected. Thus old soils in high-rainfall areas are liable to be much leached, while new soils in low-rainfall areas may be rich in minerals. The leaching is also affected by another important factor—that of the ground cover, which in turn is a reflection of the soil and climate. The oak tree, which deposits each year a mulch of rich compost on the soil surface, returns there the minerals previously leached from the soil to the subsoil. Other trees such as pine, whose leaves are not so rich, are not so effective in this respect, or may produce acid conditions to assist the leaching process. In New Zealand we have the counterparts of these trees, and it is considered that the kauri has been responsible for the destruction in fertility of large areas of soils in North Auckland known as gumlands.

On the other hand soils where generations of puriri trees have grown are high in fertility, owing probably to the protection given to the soil by these trees.

Leached heavy soils are deficient in lime and sometimes in potash. Leached light soils usually are deficient in potash and often in lime. Nitrogen is also very deficient in those soils, but can be made up by clovers in the pastures. The clovers will grow only if the other deficiencies —phosphate, lime, and potash—are made up.

When sowing new grass on leached soils high production will not be obtained until the soil demands are fully met in lime, phosphate, and potash. It may require ½ ton of phosphate, 1 ton of lime, and 4cwt of potash to meet the requirements. The farmer usually takes a period of years to meet the full soil requirements of these minerals. On some farms where topdressing at heavy rates has been practised for a long period further topdressing at the rate which was necessary in the early years may be wasteful.

The continued high production on such farms in spite of reduced topdressing as the result of the rationing of fertiliser during wartime appears to bear this out. Nevertheless it is fully expected that continued though smaller dressings of phosphate will be necessary to supply readily avail-

CONCRETE
for Happy Pigs!
Concrete is clean, dry, pest-proof, permanent. Pig experts recommend concrete for healthy piggeries. Make yours in Wilsons Star Cement. Also Paths, Yards, Posts, Tanks, etc. Send a post-card, stating what you wish to make, and we will supply instructions free.
11.3

Wilsons N.Z. Portland Cement Ltd., South British Insurance Buildings, Shortland Street, Auckland.
WILSONS N.Z. PORTLAND CEMENT LTD

able phosphate in such areas, and lime which is readily leached from the soil will have to be supplied at normal rates, while on soils where trials reveal marked deficiencies still heavier dressings of lime will be required.

Determining Form of Phosphate

The form of phosphate which should be supplied is largely determined by the lime and organic status of the soil. Where these are high straight superphosphate usually is efficient, but where lime is in short supply a reverted superphosphate should be applied. Where the lime deficiency is very great and the soil is low in organic matter even reverted superphosphate is ineffective, and it is necessary to apply lime some time before superphosphate in any form is applied. On such soils in high-rainfall areas basic slag when available would give payable returns without using lime, as would, to a lesser extent, the rock phosphates. However, the war has prevented the importation of such forms of phosphate, and the only alternative is to use lime and apply reverted superphosphate. Where lime is easily transported this presents little difficulty.

To even out as far as possible the growth of grass it is of advantage to use a quick-acting form of phosphate, such as superphosphate or serpentine superphosphate. These fertilisers applied in the autumn increase the growth in the months to follow. That is why topdressing in the autumn is important. On the colder heavier soils early autumn topdressing is important. On the lighter soils topdressing may be delayed till late March or even April and give increased winter growth of grass.

Green Manuring

GREEN manuring is necessary where the system of farming practised does not permit of maintenance of the organic matter in the soil. Fortunately for New Zealand there is very little need for green manuring on our ploughable country. Except on the steeper country and in some arable areas subject to over-cropping our system of grassland farming has built up the organic status of dairy and sheep farms.

Practically the only areas where green manuring need be practised are on vegetable and fruit farms, where the land is subject to many years of cultivation and cropping without laying down to pasture or being given a spell to recuperate. On such areas green crops are planted and sown as catch crops when the land would normally be idle for a short time. The green crop must therefore be rapid in growth and one which will quickly break down in the soil, mustard being favoured in some areas because of these qualities. Sown this month in a mild climate it will produce a large bulk of green material ready for ploughing in before the winter cold checks growth. The material will be well decomposed in time for working the ground in the late winter or early spring.

The ploughing in of green crops can be accomplished more easily if the crop is boarded or rolled in the direction that the ploughing is to be done and if a drag chain is attached to the plough to ensure that the green material is well covered.

If mustard seed is not available, lupins or barley may be used. Both are rapid in growth, although not quite as rapid as mustard, but the slowness of their decay occasions difficulty where the ground requires working, as it frequently does soon after the crop is ploughed in.

—J. E. BELL, Acting Land Utilisation Officer, Wellington.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months May to December, 1944, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	114,410	550,746	178,746	95,284	559,438	166,549
Poverty Bay-Hawke's Bay	34,666	46,357	266,898	124,735	742,417	16,648
Taranaki-Manawatu ..	47,394	202,033	98,845	62,174	443,697	76,498
Wairarapa-Wellington ..	20,585	18,468	136,197	53,034	304,140	16,017
Totals	217,055	817,604	680,686	335,227	2,049,692	275,712
Abattoirs	78,065	20,540	377,804	125,622	75,423	32,282
North Island Totals ..	295,120	838,144	1,058,490	460,849	2,125,115	307,994
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,193	10,021	8,019	5,529	58,169	8,037
Canterbury	9,209	33,513	201,698	171,670	666,804	21,615
Otago-Southland	8,277	32,132	151,929	137,122	726,458	3,441
Totals	18,679	75,666	361,646	314,321	1,451,431	33,093
Abattoirs	34,546	6,227	171,852	93,498	35,454	8,116
South Island Totals ..	53,225	81,893	533,498	407,819	1,486,885	41,209
Dominion.						
Meat-expt. Slaughterhouses	235,734	893,270	1,042,332	649,548	3,501,123	308,805
Abattoirs	112,611	26,767	549,656	219,120	110,877	40,398
Grand Totals	348,345	920,037	1,591,988	868,668	3,612,000	349,203
Same Period, 1943— Meat-export Slaughterhouses and Abattoirs ..	293,746	794,701	861,534	475,612	1,531,888	119,728
Same Period, 1942— Meat-export Slaughterhouses and Abattoirs ..	315,082	783,016	720,693	430,664	1,395,229	177,541

Slaughterings of Pigs

The 66,389 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of December, 1944, were distributed in weight ranges as follows:—

Up to 60lb.	26
60 to 120lb.	7,155
121 to 160lb.	34,152
161 to 175lb.	17,849
176 to 185lb.	3,654
186 to 200lb.	1,656
Over 200lb.	1,897
Total	66,389

The grading of porkers was 93 per cent. 1st quality, and 7 per cent. 2nd quality and that of baconers was 75 per cent. Prime 1's, 19 per cent. Prime 2's, and 6 per cent. 2nd. quality.

In the different weight ranges the grading was as follows:—

	Prime 1's.	*Prime 2's.*	*Seconds.*
121-160lb.	80 per cent.	15 per cent.	5 per cent.
161-175lb.	67 " "	27 " "	6 " "
176-185lb.	69 " "	25 " "	6 " "
186-200lb.	69 " "	21 " "	10 " "

ORCHARD AND VINEYARD

Harvesting, Spraying, and Budding

THE principal work during the coming month will be harvesting of the main crop of apples and pears, and a good deal of care should be exercised in picking, packing, and grading. Two pickings will be necessary with most varieties, and only fruit at a suitable stage of maturity should be selected.

Under existing marketing conditions it is reasonable to assume that the bulk of the fruit will be required for consumption within the Dominion, and, unless intended for cool storage or orchard storage, it should be allowed to remain on the trees to gain the maximum amount of colour, but should still retain a natural crispness. Fruit intended for orchard storage should be harvested in a less mature condition than fruit picked for immediate consumption. It should be sound and free from skin injuries, such as skin-punctures, insect bites, or any other injury which is likely to impair the keeping qualities of the fruit. It should be stored in sound, clean cases, preferably paper-lined, should have good ventilation, and the top cases in the stacks should be covered. Orchard-stored fruit should be inspected periodically, and rots should be removed.

All fruit should be handled and dispatched as expeditiously as possible, as this has a big bearing on the ultimate out-turn, particularly in the case of fruit intended for cool store.

It is almost certain that during the forthcoming season many new and inexperienced packers and graders will be employed, and, as mentioned in the previous notes, strict supervision of this type of labour is essential. Until the principles of packing have been thoroughly grasped new packers should not concentrate too much on speed, but should see that their packs are correct; speed will come with practice. Good packing is dependent largely on correct sizing, and, with the mechanical graders at present in use, little or no difficulty should be experienced in this direction. "Cheek" packing should be the only style used, and "angle" packing should be religiously avoided, as this type of packing is usually the cause of a good deal of bruising. The bottom layer is actually the foundation of the pack, and if this is done correctly, no difficulty should be experienced in completing the case. Care should be exercised in nailing up, and any packs which appear to be too high or too low should be returned to the packers for adjustment or repacking. Stamping of details on the cases should be neat and legible.

Spraying

Whilst harvesting will occupy a large portion of the growers' time during the next few months, spraying should on no account be neglected. In districts where humid conditions prevail it is advisable, should conditions continue to be favourable for the development of fungous diseases, to continue spraying with lime sulphur 1-180, or Bordeaux mixture 1½-3-50 during March and into early April. Varieties subject to a late infection of black spot, such as Dougherty and Statesman apples and Winter Nelis pears, should be closely watched. Codling moth, leaf-roller caterpillar, and red mite may still be troublesome, and where these insect pests are still in evidence sprays of lead arsenate and summer oil, as recommended in previous notes, should be continued to within a short period of picking.

Budding

The budding of pip and stone fruit trees can be proceeded with at the present time, when the bark should lift readily for the insertion of the bud. Buds should be selected from the middle portion of the current season's shoot, rather nearer the base than the tip. The shoots from which the buds are taken should be of medium thickness. It is important that wood-buds should be used, as a blossom bud will not grow. There should be no difficulty in distinguishing wood-buds; they are usually thinner and more pointed that fruit-buds. For peaches and nectarines it is best to select treble buds. This also applies, although to a lesser degree, to plums, apricots, and cherries. Bud-sticks from which the buds are taken should be kept fresh, and this can be done by performing the operation of budding as soon as possible after the bud-sticks have been taken from the tree. Shoots should be cut from a selected tree, the upper and lower portion cut off, and the leaves removed, leaving about ½in. of the petiole or leaf-stalk. Budding in itself is not a very difficult operation, but care must be exercised in cutting to see that the bud or stock is not damaged.

The buds must be pressed firmly into the incision in the stock to ensure close contact, after which the whole must be securely bound with raffia, both at the top and the bottom of the bud, in order to exclude rain, wind, and sun, which may have a detrimental effect on the buds. Budding on stocks should be done from 6in. to 9in. above the ground. From three to four weeks after budding an examination should be made, and if it is found that the ties are being strained by the swelling of the stock, they should be severed by running a knife through them at the back of the stock, but they should not be removed, as they are required to protect the buds.

—D. J. HOGG, Orchard Instructor, Mapua.

Citrus Notes

Fertilisers Essential for Healthy Trees

TO maintain bearing citrus trees in a healthy state the application of fertilisers is necessary, even where organic matter is being applied in the form of a cover crop or as compost. Conversely, cultivated soils fed on an unvaried diet of chemical fertilisers soon show signs of poor physical condition, which ultimately leads to unsatisfactory tree vigour. Therefore, the application of organic matter supplemented with chemical fertilisers can be expected to give best results.

The three main plant foods required are nitrogen, phosphate, and potash, and failure to apply any one of these three nutrients is liable to limit the usefulness of the other two. Nitrogen greatly assists tree growth, and when applied in adequate quantities in the autumn is liable to cause a continuation of shoot growth well into the winter months, thus increasing the danger of frost injury, which is of particular importance in the late varieties of sweet orange. To obviate these undesirable effects the main application of nitrogen should be made in the early spring, and a much smaller quantity applied in the autumn. The other two main plant foods can safely be applied in either spring or autumn, but preferably about two-thirds of the quantity

recommended in spring and one-third in autumn.

Dried blood is an excellent form in which to apply nitrogen, but as it is not available under the present rationing scheme in sufficient quantity to supply the requirements of mature trees, it therefore becomes necessary to supplement the blood fertiliser with nitrogen in another form, sulphate of ammonia being suggested.

Finely-ground bonedust is considered a suitable form in which to apply phosphate, but this may also require to be supplemented in many cases by the use of serpentine super phosphate. This fertiliser also contains a small amount of magnesia, a trace element required by citrus and found to be deficient in some citrus areas. While sulphate of potash is the cheapest and best form in which to apply potash, it is not at present available. Muriate of potash is recommended as an alternative. Recent soil analysis has shown that in at least one of the main citrus areas of New Zealand the potash content of the soil in many orchards has declined considerably during the past decade. It is important that this trend should be arrested before the trees commence to show evidence of potash deficiency.

Time of Application.

The autumn application of fertiliser should be made shortly before the wet autumn period commences. The commencement of this period cannot be accurately forecast, but frequently occurs in early March. Suitable fertilisers applied in February or early March and immediately worked into the soil can be relied on to stimulate the autumn growth and increase the size of the winter crop fruit. If the application is delayed until late in April, the same results cannot be expected.

Liming.

Lime may be applied at any time of the year, and dressings of at least one ton per acre broadcast every alternate year appear to be highly desirable in many of the citrus-growing areas. Where sulphate of ammonia is being used additional lime should invariably be applied at the rate of one and a half pounds to every pound of the fertiliser.

Cover Crops.

The value of cover crops, particularly of leguminous plants such as blue lupins, is universally recognised by citrus growers. The sowing of lupin seed in late February or early March enables the crop to reach a suitable stage of development for ploughing in early in the spring. Detailed advice on the sowing of cover crops appeared in the December issue of the "Journal."

Dicky-rice Weevil.

Bands of tangle-foot material applied to the trunks of citrus trees for the control of dicky-rice weevil are liable to become covered by a thin coating of dust, especially during the summer months. This coating eventually becomes sufficiently hardened to enable the weevils to cross the band. It is therefore important that the tangle-foot should be rubbed up at intervals throughout the season, and more of the material applied when necessary.

—P. EVERETT, Orchard Instructor, Kaikohe.

The Home Orchard

Numerous enquiries from the occupiers of small farm and suburban orchards have led the Department to publish a bulletin explaining the methods available for combating the commoner insect pests and fungus blights. The directions are given in an elementary form to suit the special requirements for the control of codling moth, red mite, woolly aphis, scale insects, black-spot of apples and pears, powdery mildew of apple trees and peach-curl in such orchards. Those interested in the subject are recommended to write to the Department of Agriculture at Auckland, Wellington, Christchurch or Dunedin for a **free** copy of bulletin No. 77.

HOME GARDEN NOTES

Work for March

Insult not nature with absurd expense,
Nor spoil her simple charms with vain pretence;
Weigh well the subject, be with caution bold,
Profuse of genius, not profuse of gold.
—Humphrey Repton.

APPLIED to vegetable production, whether in the home garden or commercially, the lesson to be learned from the above quotation is that no amount of financial expenditure or pretence of effort alone will ensure success. Nor will success be achieved by wishful thinking. Thought goes before action, and planning will save money and labour.

The growing season, now well advanced, has not been what might be termed an ideal one, and many home gardeners have had disappointing results from efforts to produce the vegetables necessary for family requirements. The reasons for failure may not always be readily apparent; but an annual "stock-taking" is well worth while. Note should be taken of the varieties of seed sown or vegetables planted, and an estimate made of those which succeeded best at different periods of the growing season. By this means the most suitable selection can be made for future operations.

It can also be determined whether, taking all factors into consideration, sowing or planting had been carried out too early or too late in the season, or under suitable conditions.

The kind and quantity of manures and fertilisers used can also be considered, and a determination made as to their suitability for the respective crops to which they were applied. This may largely be judged in accordance with crop responses. If, for instance, tomato plants showed abnormal leaf and stem development with a tendency towards being readily affected with disease, it can be correctly assumed that the fertiliser applied contained too much nitrogen—that it was, in a word, unbalanced.

How cropping in the garden was carried out should also be considered, and any alterations decided on should be adopted in planning for next season's production.

Don'ts

DON'T omit spraying or dusting spring cabbage seedlings. Unless this precaution is taken, aphis may quickly destroy the young plants.

DON'T permit any part of the garden to be without a growing crop. A green manure crop can be grown on any vacant area.

DON'T allow mature potatoes to remain in the garden undug. After prolonged wet weather the tubers may start second growth.

DON'T neglect gardening tools. From the condition of his tools the ability of the owner as a gardener can almost invariably be judged.

Compost

As a large amount of composting will have been carried out with vegetable and other plant refuse during the growing and harvesting period, it seems desirable to give a word of warning regarding the indiscriminate application of the product of the compost heap to the garden soil and to growing plants.

Numerous correspondents have recently requested advice concerning diseases of plants, the writers invariably stating, "No manure has been used, only compost." As has previously been stated in the "Journal" notes, proper compost is not and cannot be made by simply piling up a heap of vegetable trimmings, weeds, etc., in some corner of the garden. Great care should be exercised in laying the foundation of a compost heap. Ventilation is essential for aerobic fermentation of the material used, and, unless this is achieved, disease spores will not be destroyed. When, therefore, the so-called compost is applied to the garden the consequences can more easily be imagined than described.

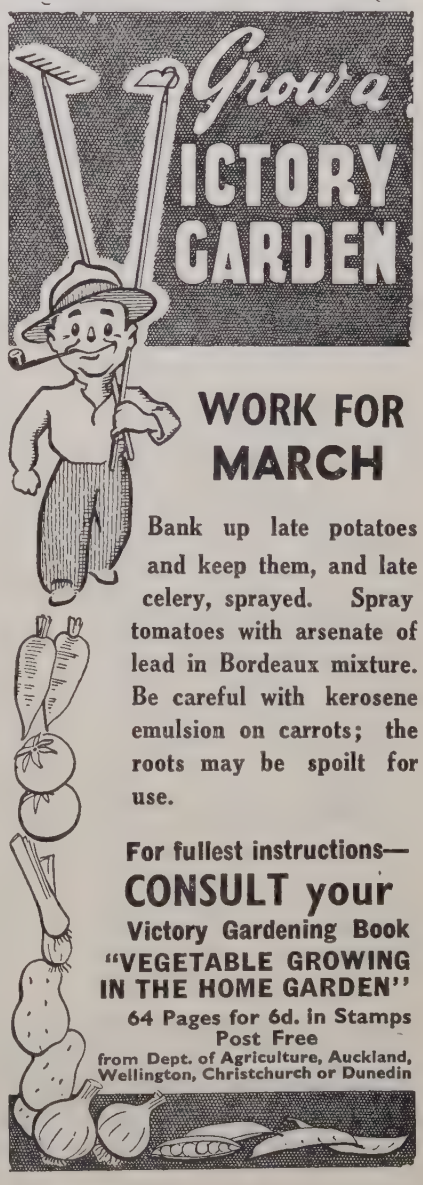
Tomatoes

Provided tomato plants in the garden have been properly cared for, ripe fruits should, during March, be in good supply. When picking tomatoes care is necessary to prevent a large part of the fruit stem being broken from the vine, thereby causing a wound by which injurious fungi or bacteria may attack the plant. If the proper method of picking tomatoes is not known, it is better to use both hands, the stem being held with one hand while the fruit is removed with the other.

Where birds are troublesome it is better to remove the fruits as soon as a change in colour is noticed. This is first apparent at the blossom end, where a slight pinkish-yellowing takes place. When this condition is reached the fruits can be removed without fear of their not ripening, provided they are kept where normal temperature obtains. They should not, however, be placed at a window where they will be exposed to the full heat of the sun.

Onions

During March every effort should bs made to harvest the onion crop. No water should be applied to the bed, and hoeing should cease. To secure ripe bulbs dry soil conditions are necessary. When the onions have been removed from the soil they should be laid out in "windrows" along the garden, and handled carefully. Allowed to remain in the open for two or three


Grow a
VICTORY
GARDEN
WORK FOR MARCH
Bank up late potatoes and keep them, and late celery, sprayed. Spray tomatoes with arsenate of lead in Bordeaux mixture. Be careful with kerosene emulsion on carrots; the roots may be spoilt for use.
For fullest instructions—
CONSULT your
Victory Gardening Book
"VEGETABLE GROWING IN THE HOME GARDEN"
64 Pages for 6d. in Stamps
Post Free
from Dept. of Agriculture, Auckland, Wellington, Christchurch or Dunedin

dry days, they will then be fit for storing. If, at time of harvesting, wet conditions obtain, the bulbs can be removed to a dry, airy shed, where there is a good circulation of fresh air. Only the best, undamaged specimens should be stored.

Silver Beet

Plants from seed sown in January should be set out now, if this has not been done in February. Silver beet plants are not so liable to insect attacks as cabbage, etc. They are relatively easy to grow, and, provided a favourable start is obtained, good growth will be made before really cold weather conditions are experienced. In selecting a site for the silver beet bed, a well-drained part of the garden should be preferred. This vegetable cannot remain healthy and become properly matured in an unfavourable soil environment. For this late planting 3oz. per sq. yd. of blood and bone manure should be broadcast over the bed and well worked into the soil before setting out the plants. If plants are purchased, the variety asked for should be Giant Broad White Rib (dark curled leaf).

Carlton Specials
FOR YOUR GARDEN

EARLY PROLIFIC PEAS
Easily the best for early sowing. Give large crops of well-flavoured peas. 1/- packet, 1/3 posted.

PUKEKOHE LONG-KEEPER ONION
Finest grown. All seed is Government Certified. Price 9d. packet, 11d. posted.

ENGLEMAN GIANT PANSY
This seed will give you a splendid showing of Exhibition quality blooms. Price 3/- packet, 3/2 posted.

SUNGLOW ICELAND POPPY
Complete range of colours in this most popular of winter flowers. Price 2/- packet, 2/2 posted.

CARLTON SEED CO
263 MARANGAHAPE RD. AUCKLAND

Celery

Solid White variety of celery should, if planted in February, be encouraged to make substantial growth before very cold weather starts. This is best done by maintaining the plants in a weed-free condition and making regular applications of liquid manure. The variety mentioned is a dwarf, and should not be expected to reach the usual height of early-maturing celery. It is, however, stocky, and, under good cultivation, will produce satisfactory results.

Celery plants now about ready for harvesting should be carefully blanched if they are intended for consumption in an uncooked condition. For ordinary culinary purposes the ribs may be used without being blanched. Blanching may be done by placing boards on either side of the plants when grown in single rows. When grown in a bed of two or more rows, boards placed round the bed and close to the outside will be sufficient to blanch all the plants. Blanching may also be done by wrapping the plants with paper to a height of 12 to 15in. from the ground. If this method is adopted, the paper should not be placed hard on the soil round the plants; space must be allowed for air circulation. In the taller varieties it is sometimes advisable to tie the outside leaves loosely near the top. This is specially recommended in districts where high winds obtain at a time when the celery plants are reaching maturity.

Leeks

No effort should be spared to get the plants well grown before the advent of winter. Leeks are of such culinary value and are so easily produced that any labour spent will be amply repaid by the crop obtained. It should not be overlooked that leeks are gross feeders, hence the necessity for plants to be grown in rich soil, well supplied with organic matter, and few vegetables will respond better to heavy dressings of well-rotted stable or farmyard manure. During March liquid manure regularly applied will be a distinct advantage in assisting maturity.

Marrows, Pumpkins, Squash

During dry weather conditions which may prevail in late February and early March the foliage of each and all of these varieties is liable to be attacked by aphis. Unless destroyed as soon as possible, these parasites considerably reduce the vitality of the plants, thus adversely affecting crop production.

Spraying with nicotine sulphate or paranaph will destroy the pests, as also will dusting with derris. When it is intended to store part of the crop it is advisable to place each selected gourd on a piece of timber. This will prevent rotting of that part of the fruit which rests on the ground, and is particularly recommended for situations where late in the season drainage conditions may not be entirely satisfactory. Excessive vegetable growth should be "stopped" by removing the growing point from all runners. If this is done, the fruits on the vines are more likely to become properly matured before harvesting.

Spinach

Home gardeners desirous of having supplies of spinach during the coming months should make a sowing of seed during March. The cool weather will almost certainly ensure good germination, and the young plants will make plenty of growth before winter. For this sowing the soil should be in a fertile condition and excellent drainage assured. If the latter condition cannot be obtained by sowing the seed on flat ground, a raised seed-bed should be made up. Good spinach cannot be grown in a water-logged soil.

In preparing the spinach bed it should be remembered that the lime requirement of the plant is very high. If the plot has not been limed for the previous crop, it would be advisable to broadcast lime, after digging, at 2 to 4oz. per sq. yd. This should be worked into the soil thoroughly before sowing the seed. The prickly-seeded variety is recommended.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Control of Wire Netting

IN order to avoid delays, modifications have been made in the control of 1½in. and 3in. mesh wire netting. For up to three rolls releases may be authorised by either the local Stock Inspector of the Department of Agriculture or the Secretary of the District Primary Production Council by endorsement on the application form. No relaxation of the present permit system can be made for more than three rolls or for poultry (2in. mesh) netting, for which applications must be sent to the Primary Industries Controller, P.O. Box 3004, Wellington. It is emphasised that the netting is imported under Lend Lease on the understanding that it is used solely for primary production. The 3in. netting is reserved for pig and sheep enclosures and the 1½in. for controlling the rabbit pest and for maize cribs.

The well-being of a people is like a tree—agriculture is its root; manufacture and commerce are its branches and its leaves; if the root is injured, the leaves fall, the branches break away, and the tree dies.—Chinese proverb.

NOTES FOR BEEKEEPERS

Harvesting the Honey Crop

BEEKEEPERS will now be able to see the fruits of their labours after what has been one of the most difficult building-up periods experienced for many years. The usual methods of apiary management during the spring had to be drastically amended in many instances. Those beekeepers who made all necessary allowances and who diligently attended to their bees in a manner suitable to the changed climatic conditions experienced will now harvest a fair crop of honey. Where the bees have done their part it then rests with the beekeeper to see that he harvests the crop in a manner that will allow the honey to reach the consuming public with its characteristic delicate flavour unimpaired.

Care in Handling Crop

Unfortunately, instances still occur where honey has not been handled with sufficient care to preserve its keeping qualities and natural delicate flavour. The chart accompanying illustrates the complex nature of honey as compared with cane sugar, and should demonstrate clearly the necessity faithfully to observe the generally-accepted correct methods of dealing with extracted honey.

A very brief description of the composition of honey may help in understanding the necessity of treating it correctly. There are two main sugars in honey, i.e., lavulose and dextrose. Lavulose is a non-granulating sugar with a definite affinity for moisture, while dextrose granulates easily and actually gives up moisture readily. Excessive moisture content affects honey in storage, chiefly by providing a suitable medium for the development of yeasts.

Removal of Honey

Supers should not be removed from the hives during the main honey flow until the combs of honey are at least 90 per cent. capped over by the bees. When there is a very heavy flow nectar comes in so rapidly that every cell is sometimes filled, and some time elapses before all the excessive moisture is evaporated off and the honey is capped over. There is no doubt a great temptation on the part of many beekeepers to get the honey off the hives quickly and not wait until it is properly sealed over by the bees. The result of this hasty action and extracting too many uncapped combs would be to secure a thin watery honey that would definitely not keep and which would also lack flavour.

Choose Suitable Weather

The hygroscopic nature of honey, i.e., its power to absorb moisture, makes it most desirable to refrain from moving capped combs of honey from the hives during wet weather or when conditions are very humid.

The storage of full supers pending extracting should not be considered unless the storage room is such that it will be possible to keep the honey under dry conditions. There are many advantages in being able to take honey off the hives and extract it the same day: (1) Uncapping is much easier and the honey parts very readily from the combs, thus reducing the time of extraction. (2) The honey is still slightly warm and less viscid, consequently it strains quickly, and when stored in the honey tank readily parts with any air bubbles that may have become incorporated during the process of straining. Very fine particles of wax, which no straining cloth could remove, also have a reasonable chance to rise to the surface before the honey is tinned off.

Cover Storage Tanks

Tanks used for the storage of honey pending tinning operations should always be well covered. A piece of muslin placed over the top of the tank is not the type of cover for the best results. A reasonably cheap cover and one that can be made easily is constructed of tongued and grooved timber as illustrated. A piece of heavy blanket neatly tacked on the underneath side acts as a seal between the rim of the tank and the wooden lid. This type of cover has advantages in that it prevents the possibility of any foreign matter getting into the honey, and also excludes the outside air, thus preventing the absorption of moisture during humid or damp weather conditions, which are often responsible for lowering the grade of any honey exposed without adequate covering.

Honey House Utensils

Cleanliness in the honey house is most essential. All utensils that are used in the extracting of honey should be thoroughly sterilised with boiling water each time before use. The affinity of honey for moisture places a great responsibility on the beekeeper to see that the above precautions are scrupulously attended to. The bees finally store honey in its best possible condition. It is up to the beekeeper, therefore, to give it to the consuming public in its most appetising form.

—C. R. PATERSON, Apiary Instructor, Hamilton.

SPEEDWAY MILK & CREAM COOLERS

Send for illustrated catalogue to Speedway Steam Products Ltd., 51 Albert St., AUCKLAND.

No. 184—"Concrete on the Farm."
Comprehensive instructions are given for the varied uses of concrete on the farm, including paths, floors, posts, troughs, and culverts.

" 202—"Weeds."
This bulletin deals fully with weeds on the farm and is profusely illustrated to enable identification.

" 203—"Conservation of Farm Machinery."
Simple instructions are given for the care of mowing machines, header harvesters, binders and ploughs. The tractor and the care of rubber tyres are also dealt with.

" 209—"How to Defeat Wood Borers."
Methods for combating wood-boring insects in New Zealand are given, the treating materials being only those readily available to householders.

" 212—"Pigs for Profit."
The bulletin states in the simplest terms the essentials in the pig department of the dairy farm and lays particular stress on litter production.

" 221—"Harness Repairs."
Farmers may save time and money by repairing harnesses themselves. Complete details are given so that the farmer may acquire a knowledge of the work.

Apply to your local office of the Department of Agriculture.

Is this sunrise . . . or sunset?

"It might be either. This man sees them both. He's on the job before daylight—he's still on the job when darkness comes. He's always worked hard. He's working harder to-day than ever. He has the biggest job in the world to do and he's doing it well. No war worker—and this man IS a war worker—needs greater skill, greater understanding of his job than does he.

No war worker has a finer record of accomplishment. No bands playing, no crowds cheering him on, no medals pinned on his chest. He's out there alone. He's the New Zealand Farmer, and he deserves our deepest appreciation. He's feeding the Nation and the World.

Arthur Yates & Co. pays this small tribute to its old friend, the Farmer. We've worked together and in harmony for over a century. . . . We'll both go on working . . . and growing . . . and harvesting in the vital effort towards Victory and Peace."

Arthur Yates & Co. Ltd.

The Southern Hemisphere's Largest Seed Growers.
Sow the Best to Grow the Best.
YATES' RELIABLE SEEDS.

The Art of Culling

THE seriousness of the present shortage of food for poultry must be faced and immediate action taken to use our available supplies to the maximum advantage. There can be no question of increasing flocks until the food situation improves, and, unless the greatest care is taken, poultry farmers may be forced to reduce their flocks appreciably.

The great need today is for drastic culling, which will not only save money for the individual poultry-farmer, but will assist the industry generally in the conservation of poultry foods, which can then be given to the really productive and healthy stock. Cull now and continue doing so throughout the year.

THIS month's article discusses some of the aspects of culling and will assist you. If you require further assistance, call on the help of the poultry instructor for your district without delay.

It is well known that there is a marked difference in the producing capacity of hens of different breeds, and of individual birds of the same breed and strain, in spite of the fact that the birds have been carefully bred, managed, and fed in the same way.

For these reasons the art of culling, or eliminating from the flock those birds that are not likely to produce sufficient eggs to give an adequate return for their keep, is one of the greatest essentials to successful poultrykeeping.

When to Cull

The modern utility White Leghorn hen is expected to produce about five times her own weight in eggs during her first laying year. This production very largely depends upon the ability of the hen to eat and digest a large amount of food in excess of that required to build up wasted tissues and maintain natural conditions. Therefore, one must realise the great importance of physical strength and constitution.

Just as there is a marked difference in the producing capacity of hens, so there is a variation in their vigour and vitality, and for this reason, if the best results are to be obtained, culling must be almost a constant job, especially on the commercial egg-farm.

To start with, there is usually a certain number of weak chickens in each hatch. These should be destroyed, for only good, strong chickens should be placed under the brooders.

The weak chicken can usually be picked out by its small, short, thin body, squeaky, peevish voice, and thin, pale shanks and beak. It lacks activity, appears dull and stupid, has a poor appetite, and is slow to learn to feed and drink. On the other hand, the strong, healthy chicken has a plump, full body, good, strong, well-coloured shanks and beak, is very active, and has dark bright eyes standing out like beads. It soon learns to eat and drink, is difficult to catch, and appears quite independent.

The Food Shortage and Autumn Hatching

WHEN adequate supplies of food were available encouragement was given to all who were in a position to do so to carry on autumn hatching. This was a means of increasing our flocks rapidly and thus stepping up egg production so urgently needed. Eggs are still needed, but unfortunately, due to an unexpected change in the food situation for our poultry caused by the drought in Australia, increased flocks cannot be contemplated at the present time. For this reason poultry farmers, large and small, are warned against autumn hatching this year. Food for additional birds is not yet available.

Watch Constitutional Vigour

As constitutional vigour is so important, it is advisable to keep a careful watch on each batch of chickens as they grow, and any that fail to develop like the majority or suffer from indigestion, diarrhoea, or other ailments should be culled, or at least marked so that they will never reach the breeding pen. This is advisable because it is quite possible that some such birds may appear to grow out of a weakness, but there is always the danger of a weakness being inherited, and if these birds are used for breeding, the weakness is likely to be transmitted to their offspring.

Weak specimens that are never likely to be profitable should be destroyed, for they are a danger in any flock. They are susceptible to any ailment, and are likely to start trouble, or even an epidemic.

Stunted birds may grow out of the apparent weakness, but it is advisable to cull them from the flock, or at least they should be marked so that they will never be used for breeding purposes.

Culling Pullets

It is a good plan to give the pullets a careful inspection when they are being placed in their laying quarters. Any backward or unthrifty birds should be culled, together with those showing any deformity, such as "dropped tails," twisted backs or beaks, or any physical weakness.

Quite a few poultrykeepers are reluctant to cull pullets, but it is advisable to remember that only birds with sound bodies, showing vigour and constitution, are likely to stand up to the strain of long, continued, profitable egg-production.

It is also advisable to keep a careful watch on pullets during their first laying year, and if a ring is placed on the legs of those that may suffer from any ailment or show undesirable characters, such as excessive broodiness, the laying of small or poor-shaped eggs, etc., later culling and selection will be more efficiently carried out.

Culling the Adult Flock

The most business-like plan is to cull regularly and to get rid of the unprofitable birds as soon as they are detected, for the poultryfarmer who culls his flock only once a year is not likely to obtain the very best reward for his labour.

However, the best time to do the main culling is immediately the poorer birds stop laying, which is usually during January or early February. A good time to select breeding stock is during February or March.

It is true that some birds moult before January, but on well-managed plants only a few of the poorer birds moult before that time. If a large percentage cease laying and go into a moult in December, it is usually a sign of some mismanagement, and such conditions are an indication of underfeeding.

Main Conditions

Before starting to cull a flock consideration should be given to the conditions under which the birds have

been managed. For instance, if birds have been subjected to a change of house or yard or a sudden change of feed, say, in December or January, many good birds may be driven into a moult.

Birds housed under artificial light during the autumn and winter will usually moult earlier than others.

Yearling hens which started laying during last February or earlier will not lay as late as the second-year hens which did not begin laying until August because of their undergoing a moult during the autumn. As it is very difficult to cull a flock of birds of different ages satisfactorily, it is advisable to keep those of various ages apart, and if this is not practicable, at least the birds of different ages should be marked.

Age to Keep

Birds which are 2½ years old or more should be culled as soon as they stop laying, for after that age very few hens are profitable, unless, of course, the birds show exceptional breeding qualities.

Early Moulters

Experience has shown that the first birds of a given age to moult are usually of weaker constitution and poor layers, and it is usually safe to cull these. The last hens in a flock to moult are generally the strongest and best producers.

All birds showing lack of vitality should be culled. Such birds are usually inactive, weak of head, dull of eye, and often show a looseness of feather. Slow-moving, sluggish birds are never great producers. The best producers are those which are constantly on the hunt for feed and never seem satisfied with the amount of food given them. They are first off the perch in the morning, and last to go to roost at night.

The big eaters are usually the best layers. It will be noticed that increased food consumption means increased egg production. The good producers have good crop capacity and good depth of abdomen, while the culls have small crops and less depth of abdomen.

Heavy Birds

Any exceptionally heavy hens for the breed they represent or over-fat birds are better culled, for such birds are not good layers. Birds of the yellow-fleshed breeds, if they have been producing heavily, will have pale beaks and legs at this time of the year, while the poor producers and the over-fat birds will usually have yellow shanks and beaks.

The novice will find that the medium birds are the most difficult to select, for they may have some good and some bad points, and it takes much experience to classify them. However, the poor to medium birds are usually on the small side, and lack vitality or that quick alert movement.

Exceptional Cases

The culling points given cannot be applied regardless of the method of management of the birds. For instance, some hens which have been broody a few times during the year may just now show those points that indicate good producers, or a hen which has reared a batch of chickens may also show up well. It is advisable to place a ring on the leg of a hen each time she goes broody, and, if broodiness occurs three times during the season, the bird should be culled.

Good Birds

The best birds will have good length, breadth, and depth, with broad backs, the width carried well back to the tail. The chest will be square and full, and the abdomen deep and full. The texture of the skin and abdomen will feel loose, soft, pliable and velvety.

Blood Testing for Pullorum Disease

CONSIDERABLE publicity has been given to the need for bringing *pullorum* disease in poultry under control by blood testing. The response to the appeal to blood-test poultry has been very satisfactory. Now is the time to continue this testing. Culling—and thus the automatic reduction of flocks—is an essential at the present time if poultry foods are to be conserved and only healthy productive birds to be fed. In the circumstances poultry farmers are urged to blood-test their flocks and to sell all the reactors off their farms. This policy will have a two-fold advantage—reduce disease and save food.

Make early arrangements with the Poultry Instructor in your district to test your flock before next breeding season—again, preferably at an early date—to assist in saving food immediately.

Internal Parasites in Poultry

Mortality and sickness among poultry of all ages due to internal parasites such as worms, is becoming distressingly common, and greater attention will have to be paid by poultry keepers to guard against future losses. It would be safe to assume that these parasites infest almost every flock of poultry in the Dominion to a greater or lesser degree and are more responsible for unthrifty flocks and low egg yields than any other cause.

"Internal Parasites in Poultry" is the subject of a special bulletin issued **free** by the Department of Agriculture. This bulletin deals with the various types of worms and gives methods of treatment. Write to the Department of Agriculture, Auckland, Wellington, Christchurch or Dunedin for a copy.

Poultry Keeping

Readers are advised that the Department's bulletin No. 66, "Utility Poultry Keeping," is out of print and *will not be reprinted.*

This will be replaced by a new series of bulletins, of which the following are now available:—

No. 197—"Theory and Practice of Incubation," 6d.

No. 198—"Theory and Practice of Poultry Feeding," 6d.

(Both Post Free)

On sale at the Department of Agriculture, Auckland, Wellington, Christchurch, and Dunedin.

IMPORTANT NOTICE

To all POULTRY KEEPERS

The present shortage (and in some cases the total absence) of essential poultry foods is causing poultry keepers everywhere grave concern.

The need is urgent to get hold of supplies sufficient to keep alive the thousands of birds in the country, and also to plan how to eke out the existing meagre stocks. The Government is already considering certain schemes.

It is fairly obvious that some form of rationing will be instituted and if you are to participate in the scheme, it is essential THAT YOU REGISTER YOUR POULTRY WITHOUT DELAY. Send us your registration receipt; this will be sent in to the proper authorities and we feel confident that a ration will be provided for you.

Further details will be supplied to you if you care to write to us. Meantime don't be without poultry foods. *REGISTER AT ONCE.*

A. M. DOULL & Co.

60 HOBSON STREET, AUCKLAND

P.O. Box 1778, Auckland.

Phone 41-735. Telegrams: "Rowallan."

YOUNG FARMERS' CLUBS

Your Club Roll of Honour

What is YOUR club doing in connection with a roll of honour as a fitting tribute to your members who have served overseas, and to perpetuate the memory of those who have made the supreme sacrifice?

(By Mr. S. G. Avery, chairman of the Wellington Y.F.C. Council, and vice-president of the Y.F.C. Federation).

THIS question is addressed to members of every Young Farmers' Club in the Dominion, whether active or in temporary recess. It is known that at least 3,500 Y.F.C. members are serving or have seen service in the fighting forces, and an endeavour has been made by the Dominion Organising Secretary to compile a complete list. Many names have been sent in, and were published at three-monthly intervals in this section of the "Journal" for a period of about two years. There have been many difficulties, particularly where clubs have gone into recess and no one has undertaken the responsibility of sending in the names of members overseas, or of supplementing former lists to bring them up to date.

The time is now opportune for every club to compile a roll of honour, or to revise existing lists, and to give consideration to some form of permanent and fitting tribute to its members who have served in the forces during the war. A number of clubs have already honoured their service members by erecting wall-plaques or other suitable forms of rolls of honour. The accompanying photograph depicts the design selected and carried out by the Apiti Young Farmers' Club. This roll of honour hangs on the wall of the club meeting-room, and is typical of some already designed by other clubs.

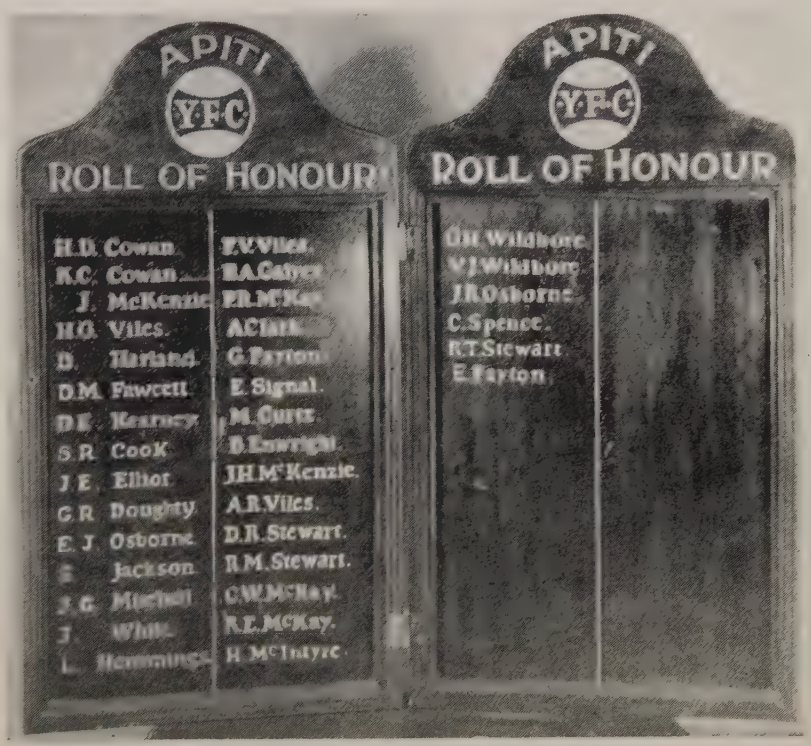
The Wellington Y.F.C. Council is willing to assist clubs within its area by arranging for the making of rolls of honour of similar design to that of the Apiti Club appearing in the photograph. It will doubtless be appreciated that by contracting for a number of these rolls the council can offer them at a price considerably lower than clubs could have them made locally. The roll illustrated is approximately 2ft. 6in. in height, and the foundation is of 1¼in. heart rimu, dark oak finish, with the monogram and lettering in gold-leaf paint. The Apiti roll of honour is in two sections; many clubs may require only one section. Enquiries have been made in Palmerston North, and the estimated cost for a one-section roll, made by skilled craftsmen, is £3/10/-, including the heading, monogram, etc., as illustrated; the painting of the members' names will be an additional charge, approximating 3/6 per name, all this work and that of the heading, etc., being done in gold-leaf paint by a signwriter. As the photograph shows, a one-section board will carry up to 30 names, and should provide an attractive roll of honour that any club should be proud to fix on the wall of its local hall or meeting-room.

In order that a bulk order can be placed, clubs within the Wellington Council's area wishing to obtain these rolls of honour should communicate with the Dominion Organising Secretary, Mr. S. Freeman, who is at present acting as secretary to the Wellington Council; his address is P.O. Box 112, Palmerston North. Application should be made by March 31 next, stating the approximate number of names to be included in the roll; following this the complete list of names should be forwarded no later than April 30, indicating, in addition, those who have been decorated or killed in action, etc., so that this can be noted on the roll. Special care should be taken to ensure that the lists are complete and correct in every detail, and in every case space can be left for additional names if required.

Clubs and club members should give this matter urgent attention, and make application as early as possible. Remember, the greater the number of rolls ordered the lower the individual cost. If you are a member of a club still in recess, do your very best for your members overseas by endeavouring to revive your club, and make the compiling of the roll of honour one of the club's first tasks when re-established.

The Wellington Council is recommending the adoption of the above plan to the other three councils, and suggests that the design as selected be made uniform throughout the federation. In any case it is hoped that all clubs will, as opportunity offers, completely revise their lists of members overseas, and forward a copy to the Dominion Organising Secretary; this will do much towards the compiling of a complete Dominion Y.F.C. roll of honour.

Over 65,000 electric motors are in use on New Zealand farms, and an insight into factors concerning their operation and maintenance is contained in Bulletin No. 204, "Electric Motors on the Farm," which is available free from offices of the Department of Agriculture.



South Canterbury District Field Day

(By Mr. D. Saunders-Loder, Pleasant Point.)

A SUCCESSFUL field day was recently held by the South Canterbury District Committee on Mr. Woofinden's property at Pleasant Point. There was an attendance of 120 young farmers and farmer friends from various parts of South Canterbury.

In the morning Mr. C. C. Leitch (Instructor in Agriculture, Department of Agriculture) conducted the party over the property. The first paddock inspected contained a mixture of pedigree white clover and pedigree rye, which followed a crop of green-feed and oats. A feature here was the excellent growth of white clover, which is usually later in developing.

In the next paddock an inspection was made of a pasture consisting of pedigree rye and Government Stock white clover, sown down after turnips. In this pasture, in its second year, an excellent stand had been established. At that time it was shut up for a crop of white clover seed.

In the third field one crop of white clover had already been taken off and the pasture was in such good heart that it was thought advisable to take a second crop, a practice which Mr Leitch thought should not become general, unless unusual conditions prevailed.

Next the visitors saw a stand of lucerne and cocksfoot which was sown several years ago on the lighter part on the farm. Its strong point was that it built up the humus content and provided excellent grazing during dry weather. It was ideal feed for dairy cows and good for converting into hay, the only disadvantage being that the cocksfoot obtained control as continued grazing reduced the crown of the lucerne and weakened the plant.

Sowing to Pasture

While conducting the party over the farm Mr. Leitch made many valuable observations. Like everyother crop a pasture required a fine seed-bed in order that it could thrive well in its first stages of growth. It was not wise to have too fine a tilth, as, if wet weather followed, it would be inclined to set too hard.

In South Canterbury January and February were the best months for sowing, even if the weather was dry, as usually there were good autumn rains. As a general rule one ton of lime sown with the seed and 5cwt. applied every year was sufficient to give a constant supply of lime. It was also important, when sowing, to see that there was a balance of ryegrass and clover, as too much rye tended to reduce the quanttiy of clover, which is undesirable on account of the particular value of the clover in building up nitrogen supplies.

Grazing

Mr. Leitch emphasised the importance of controlled grazing; over-stocking reduced the foliage to such an extent that the plants did not recover sufficiently to produce good seed heads. In the autumn pastures renewed their rooting systems and it was advisable to spell them while this was taking place. Control gave better seed returns at a more economic value.

MR. W. DIVAN demonstrating the setting of a plough.

In general the aim was to take the ryegrass crop the first season, the clover crop the next, and then graze until ploughed up again. Further crops would tend to reduce vitality, and the sward would become subject to attack from **porina** and grass-grub. It was necesary to shut the pasture up when the flowers were showing, and in order to overcome the suckling clover problem it was advisable to graze slightly more heavily in the spring.

Harvesting Seeds

The aim in seed production was to get a good yield of seed without heavy growth, the latter making the crop too bulky to handle economically. Harvesting of white clover, the speaker stated, was not easy, as it was difficult t odetermine the most suitable time to cut, but he thought tha the crop was at its best when 75 per cent. of the field was ripe. There were always flowers at various stages of ripeness, and if a farmer waited for them all to ripen a good deal of the earlier maturing seed would be lost.

Usually seed crops could be harvested for two seasons, although occasionally a third crop could be taken without loss to the pasutre. Following this, several different courses could be pursued, but the usual procedure was to sow cereal crops for perhaps two years, then a root crop, following which the land could be put down in pasture again.

In conclusion, Mr. Leitch dealt with the importance of pastures in the general scheme of farm management. Nitrogen supplies were built up by the grasses, and if farmers had pastures at various stages of growth with controlled grazing, and good management to control weeds, all would be well. It was unwise to expect too much from a pasture, and he advised that the aim should be to build up fertility by sowing, grazing, and harvesting pastures, and then, with the humus content at a maximum, to "cash in" on the fertility. A balance between seed harvesting and stock was necessary, as both had a definite place on a good farm.

Certification of Seeds

The speaker then dealt with the certification of grass seeds, for which entries closed on the last day of November for perennial rye, Montgomery red clover, cocksfoot, wheat, Italian rye, and the new H1 ryegrass. He urged on farmers the need to supply the "nsert slips" at the time of application. An area sown with seed eligible for certification need not be entered in the first year; it could be entered three years after sowing, provided the "nsert slips" could be pro-

duced indicating the class of seed sown. Areas eligible for certification were stock seed, and pedigree seed of perennial rye, pedigree seed, and Mother seed of Montgomery red clover and Italian rye, and stock seed only of H1 ryegrass.

Practical Demonstrations

In the afternoon practical demonstrations of useful farm jobs were given. Mr. W. Divan, of Rosewill, demonstrated the setting of a three-furrow plough. He mentioned that the "set" of the skeiths was most important and yet was not given much attention. Another point was that the distance between the beam and the coulter must be the same for the three furrows.

Mr. F. H. Friel then demonstrated the correct method of dressing a sheep, and also the correct procedure in drying skins. This was followed by a demonstration given by Mr. N. Cook on the setting of saws.

Mr. R. France, chairman of the South Canterbury Y.F.C. District Committee, thanked all who had attended, and expressed a hope that all the young men present would become active members of clubs, as they had a good deal to offer those on the land. He then thanked those who had given the demonstrations.

Mr. G. Blakemore, president of the Farmers' Union, congratulated the Young Farmers on organising the activity which had proved such a success.

Thanks were also expressed to the Woofinden family for making their farm avialable for the field day, and to the ladies who had assisted with the preparation and serving of lunch.

Methven Club's Pasture-Judging Competition

(By A. A. Grigg, Hon. Secretary, Methven Y.F.C.)

A PASTURE-JUDGING competition arranged by the Methven Y.F.C. was held on Mr. M. S. Turton's Alford estate, and was attended by 25 members. Mr. G. K. McPherson, Department of Agriculture, acted as judge.

Four different paddocks were judged by the competitors, and the winner was Ian Mangin, who received Mr. F. G. Oldfield's Challenge Cup. George Limbrick was second, and M. Poff third. Trevor Grigg was awarded Mr. A. J. McKay's special trophy for members under 18. Mr. A. W. Wilson was the donor of the second and third prizes.

Mr. Oldfield, in presenting the trophies and prizes, congratulated the winners on their success in the face of such keen competition. All present were the guests of Mrs. Turton at afternoon tea.

East Tamaki Club's Field Day

(By L. W. Gubb, Hon. Secretary, East Tamaki Y.F.C.)

THE East Tamaki Young Farmers' club is taking full advantage of its proximity to Auckland and its industrial areas, and following visits to other places of commercial and industrial interest, a field day was recently held at the Westfield Freezing Company's works. Some idea of the extent of these works can be gauged by the killings for the year, which were as follows:—900,000 sheep, 125,000 pigs, 120,000 cattle, and 200,000 bobby calves.

On the occasion of the field day the visitors were shown over the entire works, and spent a very interesting and profitable day. Members were particularly struck with the efficiency of the highly-mechanised killing and canning departments, and were also intensely interested in the range of stock foods and meals being prepared for supplementary feeding. The party numbered 37, and consisted of 25 members of the club, and 12 members from the Otahuhu and Howick High Schools.

Enfield Y.F.C. Field Day

(By R. Buzan, Hon. Secretary, Enfield Y.F.C.)

A SUCCESSFUL field day was recently held by the Enfield Young Farmers' Club on Messrs. Kennedy Bros.' farm at Windsor. The demonstrations were of a very useful and practical nature, and were as follows: Messrs. A. Wallace and Ward Thomson spoke on the respective merits of the Romney, Southdown, Ryeland, and Corriedale sheep; both men gave very instructive talks and practical demonstrations. Mr. Thomson also took the opportunity to demonstrate the "bloodless tailer" for lambs; members were greatly impressed, and felt that the day was not far distant when the knife could be done away with entirely.

Mr. W. Hamilton gave a very instructive talk and demonstration on pigs. Messrs. Kennedy Bros. are to be commended for the quietness of all their animals. One sow with a litter stood very quietly with the young pigs suckling her, and Mr. Hamilton was able to handle her and point out what was required in a good sow. He emphasised, among other matters, the shortage of pig meats in New Zealand, especially in the South Island.

In the evening the club held a euchre tournament and dance in the Enfield Hall. The euchre prizes were won by Mrs. E. McLeod and Mr. W. Craig. Mr. J. Elliott supplied the music for the dancing, and Mr. F. Mulligan acted as M.C.

. . . . farming
has a business side

Realising this, The Farm Accounting Association of N.Z. (Inc.), which has Branches at most main centres throughout the South Island and which handles some thousands of farmers' taxation returns and balance-sheets, evolved

A CORRESPONDENCE COURSE FOR FARMERS
(and particularly young farmers)

This Course is a comprehensive one and covers the principles of business knowledge, farm finance, bookkeeping, legal and other problems which confront the farmer.

HUNDREDS HAVE BEEN HELPED - WHAT ABOUT YOU?

send for FREE brochure

THE FARM ACCOUNTING ASSN. OF N.Z. (INC.)
HEAD OFFICE BOX 693, DUNEDIN.

Reports on Club Activities

WESTERN SOUTHLAND.

Southland Technical High School.—Visit to the annual cattle fair held at the Invercargill Show Grounds. Keen interest in the proceedings was shown by members, who had a splendid opportunity to study the fine points of Friesian, Shorthorn, and Aberdeen Angus cattle. Fifty-six members were present out of a total of 78.

SOUTH CANTERBURY.

Geraldine.—One new member enrolled. Arrangements in hand for a club dance. Interesting talk by Mr. Temple on "Cricket." Twenty-five members present out of 37.

MID-CANTERBURY.

Methven.—Two new members enrolled. Report by J. Dixon on the inter-club stock-judging competition held recently on Mr. R. J. Low's property. Three members appointed to act as stewards at the Ashburton A. and P. Snow. A mock meeting was held, in which the club acted as the Methven Trotting Club. Talk by Mr. G. K. McPherson, Department of Agriculture, on "Pasture Judging." Twenty-six members present out of seventy-fie.

MARLBOROUGH.

Seddon.—Correspondence and discussion on the problem of nasella tussock. The meeting was then handed over to the members from the Marmar district to appoint a speaker and chairman for the evening. Mr. K. Hammond was elected as chairman. Mr. D. Wilkie, Department of Agriculture, gave a most interesting and instructive address on "Soil Erosion in Marlborough"; this was accompanied by aerial photographs of erosion in Marlborough and Awatere. Twelve members attended out of 26.

MANAWATU.

Apiti.—General business. Talks by members returned from overseas; C. A. Spence ("Life and Farming in the Chatham Islands"); I. Old ("Farming in New Caledonia"). Seventeen members present out of 35.

Whakarongo.—One new member enrolled. Talks by club members, L. McCool and B. McCool, on "Ringworm in Cattle" and "Pampas Grass" respectively. Address by Mr. W. A. Jacques, of Massey College, on "The Selection of Seeds, and the Requirements for Winter Feeding." Twenty members present out of 24. At the previous meeting a successful programme of impromptu speeches was carried out. Talks were given by the following: J. Spall ("Conifers"); I. Wilson ("Feilding Agricultural High School"); D. Reid ("Carpentering"); D. Clark; R. Hodgson ("High-tension Power Poles"). Twenty-one present.

WAIRARAPA.

Masterton.—Arrangements for a field day finalised. The "Falloon Cup" competition for short talks was held, Mr. N. Blatchford acting as judge. Speakers were as follows:—R. Nathan ("A Trip to the Newcastle Steel Works"); E. Sanson ("Jazz"); P. Evans ("The Linen Flax Industry in New Zealand"); G. Evans ("Pig Facilities"); C. McKay ("Impressions on a Trip through North Auckland"). The award was given to G. Evans, and the cup was presented by Mr. D. McLauchlan. Twelve members present out of 65.

WANGANUI.

Hunterville.—Combined club sports meeting to be held in the New Year; three members appointed to act as a committee with members from the Marton Club, the combined committee to make all necessary arrangements. The chairman reported that the Putorino Land Girls had challenged the club to a debate; it was decided to accept the challenge and allow the Land Girls to choose the subject. Talks by M. Henwood and S. McManaway on "Ayrshire Cows" and "Pigs" respectively. There was an attendance of 14 members out of a total of 25.

Marton.—Report by committee on trees planted in Centennial Park. Past member Lieut. R. G. Simpson, on furlough, and three members of the Hunterville Club welcomed. Associate judges and junior stewards appointed to act at the Marton A. and P. Show. Selection of teams for district stock judging. Discussion on proposed inter-club sports meeting. Address by Lieut. R. G. Simpson entitled "Some Experiences in the Middle East." Eighteen present out of 38.

NORTHERN HAWKE'S BAY.

Wairoa.—Members thanked for their efforts in connection with the recent fat lamb competition held at Messrs. Swifts (N.Z.), Ltd. works. Stewards appointed to the Wairoa A. and P. Society's Show. One new member enrolled. Lecture by Mr. E. Halstead, Government meat inspector, on the subject of "Rejects in Carcasses of Sheep, Lambs, and Pigs." The lecture gave members an insight into why their stock is graded down for pleurisy, arthritis, T.B., bruises, etc. At the conclusion of his lecture the speaker answered many questions.

TE KUITI.

Te Anga Central.—The following were elected to hold office in the newly-revived Te Anga Central Club: Advisory president, Mr. D. A. Burt; chairman, J. Gordon; secretary, L. E. Smith; treasurer, R. Doe. The club has a membership of 15.

BAY OF PLENTY.

Paengaroa.—Brief report by the secretary on the recent district committee meeting held in Kati Kati. Ways and means of raising funds for the club's proposed quota to the Y.F.C. Memorial Fund discussed. At the request of the local Chamber of Commerce a representative from the club was appointed to attend their meetings. Address by Mr. McIndoe, local veterinary advisor, on matters of interest to farmers. Four visitors came to hear the address at the invitation of the club; 19 members present.

Tauranga.—Three members transferred to the newly-formed Welcome Bay Club. Arrangements made for members to act as stewards at both the Calf Club Field Day and the Tauranga A. and P. Show. Address by Mr. W. E. Barnard (ex-Speaker of the House of Representatives) on laws concerning the farmer, including the Land Sales Act, Fencing Act, draining rights, etc. Attendance of 18 members out of 24.

Te Puke.—A member (L. Ashe) appointed to represent the club on the Te Puke Chamber of Commerce, Mr. D. S. Ross gave an account of the last Dominion Executive Committee held at Wellington. Address by Mr. G. Spratt on "Sheep Management." Seventeen members present out of 27.

Te Puna.—General business. Arrangements for a club dance.

Welcome Bay.—Lecture on "Cream Grading" by Mr. T. D. Harvey, manager of the Tauranga Co-op. Dairy Association.

AUCKLAND.

East Tamaki.—Report on the recent meeting of the Auckland District Committee. L. W. Gubb made Press correspondent for the club. Address on "Animal Diseases" by Dr. Seagul, of Franklin Veterinary Club. Thirty members present out of 43.

ENGLISH IMPLEMENT PARTS

Mouldboards - Skeith Blades - Thresher Pegs - Mower, Header & Binder Sections - Mower and Header Fingers - Harrow Tines - Cultivator Points - Chaffcutter Knives - Steel and Malleable Chains - Baling Wire, etc., etc.

Stocks available now from

DORING IMPLEMENT SUPPLIES

P.O. Box 1179, Wellington.

Wairoa Club's Fat Lamb Competition

(By W. Richmond, Hon. Secretary, Wairoa Y.F.C.)

THE Wairoa Young Farmers' Club recently held a very successful field day in conjunction with the Wairoa A. and P. Society's fat lamb competition at Messrs. Swifts (N.Z.) Ltd. works at Wairoa. The field day took the form of a special fat lamb competition for Y.F.C. members, and the club is deeply indebted to Messrs. Swifts, as each Y.F.C. competitor was allowed to enter up to two pens of three lambs, there being no entry fee; Messrs. Swifts also provided lunch and afternoon tea.

Thirty members of the club were present, and 17 of them entered a total of 22 pens of lambs. The prizes consisted of 30/- for first, 20/- for second, and 10/- for third, both "on the hoof" and "on the hooks." The prize-money was donated by Messrs. W. Torbett, F. Mardon, R. Watson, Swifts (N.Z.) Ltd., G. Nolan, and H. Bayly. Mr. G. Dyer, of Hawke's Bay, judged the animals "on the hoof," and Mr. J. Barr (Government supervising grader) "on the hooks." The awards were as follows: "On the hoof," M. McKenzie, 1; R. G. Watson, 2; N. J. Walker, 3; Brian Bull, 4. "On the hooks," B. Boaler, 1; N. J. Walker, 2; R. G. Watson, 3; E. Brownlie, 4.

The prizes were presented by Miss Pat Brownlie, of the Women's Land Army. Owing to the length of time occupied by the judging it was found impossible to hold a Y.F.C. judging competition as previously proposed. The activity was the club's first venture with a fat lamb competition, and its success, on account of the co-operation so generously given by Messrs. Swifts, has led members to hope that it will become an annual event.

Beauty

BEAUTY is found in many forms. There is beauty in music—"sea-chime, and fluting bird, and tune from smitten strings"—beauty in words and "all lovely tales we have heard or read." There is beauty in architecture and sculpture and painting, "the artistries of man's endeavour"; and beauty of person is to the world

"A voice uplifted and a trumpet blown,
A silken splendour never idly furled
Or listless in life's airs, a tome of truth
For the faint earth. Oh, wondrous to have known
Beauty in you and you in beauty's youth."

Nature, too, contributes her share of largess:—

"The sun, the moon,
Trees old and young, sprouting a shady boon
For simple sheep . . . daffodils
With the green world they live in; clear rills . . . ."

We in this country are particularly blessed by the lavishness of Beauty's gifts—mountains with their shining pinnacles of snow; fiord and forest; lakes like jewels, and grassy, sunlit valleys.

Beauty is not caused.
It is.
Chase it and it ceases.
Chase it not and it abides.
Overtake the creases
In the meadow when
The wind
Runs his fingers through it?
Deity will see to it
That you never do it!

—Emily Dickinson.

Many of us long to travel abroad, and we envy those who have looked upon the fabled splendours of the Taj Mahal; Venetian palaces mirrored in quiet waterways; the flower-covered foothills of the Himalayas; the castle rock at Tintagel. But in our desire to see far places we often overlook the beauty close at hand. We tend to admire the exotic orchid more than the modest buttercup, yet the chalice of the buttercup is exquisite, both in shape and colour. In fact, one of the loveliest sights I have seen in the city for a long time was a florist's window banked high with masses of buttercups—a symphony in glowing gold.

We all know what a big part environment plays in our lives. If our surroundings are drab and unattractive, our general outlook is bound to reflect a certain amount of pessimism, whereas if we are pleasantly situated, we are at once influenced towards a more cheerful and positive way of living. This is where the housewife can do so much to bring the beauty of cleanliness and order into the home. Flowers arranged with loving care, food served attractively, floors and furniture gleaming—how greatly they contribute to our everyday enjoyment.

"A well-kept house is beautiful,
It matters not how small
Or plain the little rooms may be,
It matters not at all.
If loving hands have tended it
And burnished it with care,
A little shabby house may glow
Like light, if Love be there."

Children should be encouraged in their appreciation of beauty. The child is born with a love of nature and the promotion of his interest in the wonders about him will create in him a philosophy which not all the ups and downs of life can destroy. If we brush aside the offerings of wild flowers he has gathered; if we dismiss him with a careless, "Not now; tell me later," when he rushes in full of his discovery of a tiny bush lizard, or a trout in the stream, or a nest of blue speckled eggs; if we are too busy to pause and share his wonder and delight, we have only ourselves to blame if the child eventually ceases to regard such things as being of any account. Thus is lost a source of lasting joy and spiritual consolation, and adult life becomes immeasurably poorer in consequence.

It was an English Poet Laureate who wrote:—

"I love all beauteous things,
I seek and adore them.
God hath no better praise
And man in his hasty days
Is honoured for them.
I, too, will something make
And joy in the making . . . ."

Mary

Happy, indeed, the individual who has found for himself the truth of the poet's words.

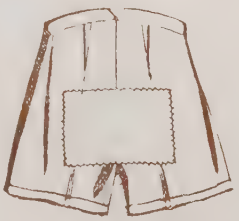
What Mothers Can Do to Save BUYING NEW

REINFORCING CHILDREN'S CLOTHES

ONE of the first things to remember is that reinforced clothes last twice as long. This applies particularly to children's clothes, which receive such a lot of wear and tear—and they should be reinforced when they are first new.

HERE ARE ONE OR TWO SUGGESTIONS

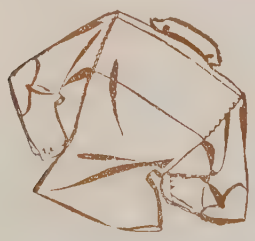
KNICKERS—The seats of knickers and trousers should be strengthened by patching on the inside—the shape of the patch is shown on the sketch. Patches should be kept in position by herringbone stitch. When there is already a lining they should be fixed as an interlining.



SOCKS—Hand-knitted socks should have the heels and toes knitted either in double wool, or with one thread of wool and another of strong cotton thread. A similar idea is to darn stockings at the heel and toe before being worn and the centre back seam should be firmly oversewn on the inside of the heel.

School Clothes

Wait until existing clothes are really worn out (if your child is just starting school) before buying the uniform. When children approach school-leaving age buy clothes that are suitable for post-school wear. When the uniform has been discarded for school wear simple alterations can completely change its appearance. When considering the question of reinforcing particular attention should be focused on schoolchildren's clothes. Schoolgirls' blouses, for instance, wear particularly quickly on desks, and should be reinforced with a semicircle of material at the elbow and strengthened across the back. Schoolboys' jackets can be bound at the elbows; useful material is the leather from worn-out gloves.



How to Let Out and Lengthen Children's Clothes

There are a wealth of ideas for letting out children's clothes; the ideas shown in the sketches are a few of the simpler ones. As a general rule, however, the outgrown article should be completely unpicked from hem to underarm each side, and then along the sleeve seam, until the whole garment can be opened out flat in one piece. Contrasting bands of material can then be let in at the sides, at the waist, and a new yoke can be made both to lengthen the frock and to let it out under the arms.

Hints On Cutting New Clothes For Children

Leave good turnings on the following parts when cutting out new clothes for children: side seams, top edges of skirts and trousers and lower edges of bodices, underarm seams of sleeves in one-piece sleeves (both seams in two-piece sleeves), across the shoulders, centre back seams on coats and jackets, also at hems, cuffs and trouser hems. Leave the extra material inside the seams of the garment when making it up, so that at some future date it can be used for letting out.

In the case of a one-piece garment like a sleeping suit allow for a deep tuck at the waistline, and in the case of a dress with a yoke leave material under the yoke.

Always make and buy children's clothes on the big side.

Some of the following are suggested as ideas:—

Men's jackets into small girls' or boys' overcoats and jackets.

Men's pyjamas into small children's underclothes, sleeping suits, nightdresses, overalls, blouses and shirts or summer frocks.

Men's old shirts into dresses, blouses, underclothes and nightgowns.

● **Most women's clothes can be cut down for children into dresses, coats, toddlers' suits, and underclothes.**

CUTTING DOWN GROWN-UPS' CLOTHES FOR CHILDREN

Never cut up clothes until they are really beyond repair.

If you are not an expert, always use a pattern when you cut down grown-ups' clothes for children. Hold the material up to the light to find the weak spots and mark with a ring of coloured tackings any worn parts that would not last long. Having unpicked the garment, wash and press all the pieces, then arrange the pattern on them, avoiding any of the marked places. Make up as you would a new garment. Don't be afraid of using different materials or colours (so long as they wash the same way). Sleeves of non-matching material look perfectly well and the bodice of a dress can be different from a skirt.

(Reproduced by permission of the United Kingdom Board of Trade.)

REFUGE

WHEN small trifles annoy me and everything goes wrong I put on a pair of stout shoes, don a blazer, push a slim volume of Tennyson's poems into one of the pockets, and set off over the fields. I always follow the same brown path and it leads me zig-zag over two or three green meadows, across a small creek overgrown with reed, and buttercups, past an old half-burned-down shed through a few native trees, and finally over a fence and on to the river-bed. There I usually sit down quietly on a moss-covered log, because in the trees there are birds carolling joyfully as with one accord. Above my head flits a friendly little fantail, and sometimes the brown larks go wagging high in the air and hang almost out of sight between the earth and the sky, until their music appears to be coming from heaven.

As I look around the scene that meets my eye is very calm and beautiful. By my feet the river babbles and gurgles over the mossy stones with which its bed is lined; far to the left I can see the sand dunes, golden in the light of the sun; eastwards roll the majestic Tararuas, shrouded in blue mystery where they touch the sky, brown and green with little valleys where they meet the grasslands. Looking southwards I see a cluster of farm buildings, their red roofs making a splash of colour on the otherwise brown and green landscape. Looking northwards there are many fields, and everywhere there are trees—light trees and dark trees, small and large, ragged or perfect in shape, but all beautiful. Such is the scene before my eyes—a panorama of beauty to delight any lover of nature.

Sometimes when I'm sitting there a brown rabbit will hop between the wires on the fence and will come quite close to me, then in fear will dart swiftly away. Sometimes hares dash past my feet and the grasses sway with their weight.

In summer-time I can smell the fragrant wild mint, and the sickly perfume of "eggs-and-bacon."

When I have mused long enough on the beauties before me, I open Tennyson's poems; the pages are worn with use and usually fall open at "Maud," for that is my favourite. As I read Tennyson's works my own troubles fall from my shoulders and I feel lighthearted again.

So after I have mused and read awhile I find I am ready to go home again, and that all my worries and annoyances have disappeared.—I.J.S.

THIS LITTLE BERLEI WENT TO WAR

Just as you were enjoying the freedom of this all-elastic, feather-weight Berlei, we all went to war. Rubber went too, and so the making of this little Berlei ceased. Its freedom-for-action rubber went into action to fight for freedom.

Alas, nothing takes the place of rubber in a corset. More intricate cutting and fitting of panels in a Berlei do compensate—but only if the exact figure-type fitting is obtainable. But our making battledress makes for a chronic shortage of Berleis everywhere.

Like a true Briton you have accepted the hardship without complaint. Forbear just a little longer. A Berlei executive is in America now, investigating synthetic rubber. Berlei hopes very soon to reward your patience. Freedom-in-a-Berlei will come when Freedom is won—and maybe sooner!

Berlei
TRUE-TO-TYPE FOUNDATIONS

"Some Shape of Beauty"

HAVE you ever watched a child with a packet of plasticine roll and pat and shape it into a boat or a bomber or maybe a bird's nest, and wished that such models might be preserved in a more permanent form? Well, children who live in the Wellington district are fortunate in having a Technical College which offers expert instruction in the art of modelling.

THESE facilities are not only available to the regular students, but extra classes are held on Saturday mornings so that children from other schools can also benefit by this tuition. The popularity of the arrangement can be gauged from the fact that the age of pupils in this section ranges from six to twenty, and in some of the special classes during the week there is an even greater variation, youngsters in their teens occasionally finding themselves alongside grey-haired adults. For years are no handicap to artistic development, and "beauty confers happiness on all, and under its influence every being forgets he is limited."

Modelling Department

My first glimpse of the modelling department of the Art School gave me the impression of light and space and whiteness—casts, walls, and woodwork; stools, stands and floorspace—everything bore the snowy imprint of plaster, as if at one time or another a huge bag of flour had burst open and the wind had carried it in little drifts about the room.

A thing of beauty is a joy for ever:
Its loveliness increases; it will never
Pass into nothingness; but still will keep
A bower quiet for us and a sleep
Full of sweet dreams, and health and quiet breathing.
. . . . . In spite of all,
Some shape of beauty moves away the pall
From our dark spirits.
—John Keats, in "Endymion."

Quietness was here and freedom from the distractions and haste of everyday life, the tranquil atmosphere being admirably conducive to complete concentration on the part of the students. Indeed, their absorption was so intent that I doubt if my entry was even noticed, save by one or two nearest the door. I stood for quite a while watching a girl, whose speciality was garden ornaments, putting the finishing touches to a lovely little child figure, smoothing the chubby fingers and curving those laughing lips with such delicate care that she was wholly unaware of being observed. Another student, busy over the graceful lines of a lynx lying outstretched on a rock, stopped now and again to study a photograph of the animal propped up in front of her, whence she had taken the idea. A third sought to express her dream for the future in the lineaments of a woman sitting "still and pondering." The pause in her labours was infinitesimal as we discussed a suitable name for the statuette.

I was most interested in the tools she was using—spatula-shaped implements of wood or metal in varying sizes. The wood used in making these "big fingers and little fingers," as they are called, is mostly the native akeake, which is so tough and durable that it thoroughly merits its Maori name, literally translated "for ever and ever."

The adjacent compartment proved to be the centre of much activity. I was just in time to witness an article being cast. First of all a length from a reel of white cotton was so placed as to mark the exact line dividing the model into two equal portions. Next a quantity of plaster was stirred up with water in a bowl much the same way as icing is made. Then when the mixture had reached the right consistency it was heaped over the model until it was hidden under a frothy mound resembling pink icecream. No housewife decorating a cake ever smoothed the frosting more carefully than the sculptor wielding his broad-bladed knife. After the plaster had begun to set (it takes anywhere from five to thirty minutes) the end of the thread was pulled, resulting in the mould being neatly sliced in two. This is referred to as the "death and resurrection" process —"death" occurring through the burial of the model beneath the plaster and the "resurrection" following when the outer mould was cut in half. Once a mould is completed it can be used to cast the model in metal or pottery, according to what is required.

Later I was shown how a mallet and chisel are employed to chip off the surplus plaster from a model. It is a task requiring a steady hand, since one false stroke of the chisel may result in damage to the image underneath. It was interesting to learn that as far back as the days of the Pharaohs the Egyptians used plaster (or gypsum, as it was known as then) for covering their sarcophagi.

Casts of Famous Works

Though New Zealand is far from the great centres of culture, her students are still enabled to become familiar with the finest types of sculpture through the South Kensington Museum, which is responsible for obtaining casts of famous works of art and distributing them to various schools in distant parts of the Empire. By this means the college has ac-

Treasure

There are remembered things,
Strange, lovely things,
Not for the hands,
But for the heart to hold:
Dark trees, lanterned with gold
By sunset; seabirds' wings;
Still pools that lie
Brimmed with dark water,
Filled with stars;
Pale evening sky;
And sunset bars
Swept by the coloured ebb
Of day withdrawn;
White foam that spills
Over the cloudy weirs of dawn;
Far purple hills;
Moonlight and starlight;
Shadow, wind and shower,
And rain-wet flower.
When winds are grey and no bird sings,
These things I ponder—lovely things.

—Doreen Price.

quired many excellent pieces, an example being a life-size replica of "The Boy and the Goose" (a work by Boethus, dating back to the third century B.C.). The ancient Greeks were fond of introducing homely domestic scenes into their pottery, and the terra-cotta ware known as Tanagra was named after the town where these charming figurines were made. Another noteworthy possession was a plaster relief of Florentine carving from the Gates of Giberti, and nearby hung Donatelli's exquisite panels, "Praise God By Singing," and "Praise God By Music," both from the famous Singing Gallery in Florence.

The Antique Room afforded yet a further opportunity for the study of classical statuary. Here were reproductions of some of the outstanding pieces in the Parthenon, the most noted temple of antiquity. Much of the decorative sculpture it contained was by Phidias, of whom Ibid comments: "Phidias carves wisdom."

The beautiful form of the Venus of Milo occupied a place of honour beside the Apollo Belvedere. Other well-known figures included "The Gladiator," "Night and Day," and "The Thinker," the latter monument guarding the tomb of that most gifted of all the great Renaissance artists, Michelangelo. The French sculptors were represented by a seventeenth century group of cherubs' heads. A drapery study by Professor Lanteri, of the Royal College of Art, provided the only modern note.

Younger Pupils' Work

Leaving that impressive assembly in order to view another classroom was like finding myself in a different world. This room was given over to the work of the younger pupils, and offered ample evidence of the success of their efforts. For it is the "treating of the commonplace with the feeling of the sublime that gives to art its true power" and the students' handling of these simple subjects revealed a high standard of teaching and achievement.

I have the average woman's aversion for mice in the flesh, but the portrait of a mouse crouching among the ears of wheat appealed to me particularly, as did the marine frieze wherein a scarlet fish darted among green seaweeds in an ocean of blue waves (the tinting had been done through the medium of water-colour). Other members of the animal kingdom represented included the "Frog Who Would A-wooing Go" and the White Rabbit who played such an important role in "Alice in Wonderland." The Mad Hatter was there, too, a somewhat dismayed expression upon his comical face, owing to just having taken a bite out of his teacup instead of his bread and butter. A group of shells awaiting a mould of plaster looked so realistic that I was minded to take a lump of clay from the big bin and experiment with it myself.

In one corner of the room stood a potter's wheel of a similar type to those one sees in pictures of Eastern bazaars, only this was a rather more up-to-date version, of course. I discovered that "to throw pottery" does not necessarily indicate a wish to smash china, but is merely the term applied to this particular method of working the clay.

New Zealand is a veritable treasure-house of materials for the sculptor. We have granite and other kinds of stone in abundance; the clay from the South Island is unsurpassed for modelling purposes; and in the north there are further vast clay tracts which are specially suited to the manufacture of pottery. It is for us to see that these valuable assets are not left to waste, and the best way to ensure this is by awakening the child mind at an early age to an awareness of shape and form, and fostering his natural abilities in this direction, so that his desire to perpetuate beauty may grow and strengthen with the passing of the years.

HAPPINESS

To watch the corn grow and the blossoms set; to draw hard breath over ploughshare or spade; to read, to think, to love, to hope, to pray—these are things that make men happy.—John Ruskin, in "Modern Painter."

far lighter than a suitcase

WHY carry a heavy suitcase, even on a 2- or 3-day trip, when all your needs are met in this new "Alexto" Overnight Bag?

Made from first-grade hide leather, in handsome grain finish and piped in smart, contrasting colours. Studded bottom prevents wear. Comfort-grip handles. High-class workmanship throughout.

Available in five colours: Brown (2 shades), Green, Blue, Red.

GUARANTEE

Look inside for the "Alexto" Guarantee Label.

You'll Get EXTRA GOOD VALUE If You Make SURE It's An

Alexto OVERNIGHT BAG

Ask your Draper, Department Store, Ironmonger, Sports Goods or Leather Dealer—there's one near you.

The Tyranny of Tonics

Contributed by The Department of Health

IN a world that has become tonic-minded to an extraordinary degree there's always someone ready to cater for the almost unlimited taste in patent tonics. Some of them do serve a definitely useful purpose, but there are others that are simply quack concoctions with fancy names and little or no merits. Indeed, some of them are harmful, so much so that the Health Department in this country has had to take steps to protect the public against exploitation that might endanger their health and well-being.

The child-like faith that many people have in tonics has been extremely profitable to makers and distributors, and it has created a demand for a wide variety of tonics.

A life of hope deferred too often is
A life of wasted opportunities;
A life of perished hope too often is
A life of all lost opportunities.
Yet hope is but the flower, not the root,
And hope is still the flower and not the fruit;
Arise and sow and weed, a day shall come
When also thou shalt keep thy harvest home.

We have spring tonics, nerve tonics, women's tonics, and baby tonics—in fact, tonics for all sorts of ills and imaginary ills. Tonics, in short, have developed into an everyday habit. You've probably noticed yourself how people advise other people—in the most friendly and helpful way, mind you—to take such-and-such a tonic for such-and-such an upset.

Simpler Aids Neglected

There is an unfortunate tendency to neglect the simpler and more helpful aids to health—and also the much less expensive aids. By that is meant plenty of rest, fresh air, sunshine, pure water, balanced diet, and proper exercise. They're not hard to get, and they're a better recipe than all the tonics in the world. Most of us would do well to save our purses, and, incidentally, the linings of our stomachs, and calmly accept the fundamental fact that there is no royal road to health. If our physical resources have been wasted over a long time, you can be sure that the period of restoration will not be shortened by resorting to artificial tonics.

Here are a couple of illustrations. A child recovering from some disease has very little appetite. A worried mother insists on giving it a tonic. The child is given the tonic, and the appetite is restored. It's a great advertisement for the tonic. But there's another side to this picture. A conscientious doctor would insist on the small stomach being given some rest from drugs and overloading with food. If his advice is followed, the child will soon, and possibly more quickly, regain a hearty appetite and have a rapid convalescence. There are times when it is desirable to follow one's inclination to refrain from solid food for a period.

The other illustration is that of an elderly, obese woman of sedentary habits who finds she has not the same appetite she once enjoyed. It worries her. She sits and lies around now after a fairly active early life, when she worked hard and ate heartily. Now she wants a tonic to stimulate her appetite, entirely forgetful of the fact that few things could be more harmful to her than to increase her food intake when it is already far in excess of her output of energy. Such a patient needs fewer total calories—making sure of a proper balance, particularly in vitamins and minerals; she needs more exercise, and should emphatically ignore tonics that further stimulate her appetite.

The promiscuous use of t is not conducive to good h they should be taken only on advice of a competent doctor af a proper examination of the patient. For example, when you have an indifferent appetite, or sleep poorly, are constipated, have a headache or other pain, or suffer from indigestion or acid stomach don't rush for the tonic bottle. The cause of those symptoms should be determined by a doctor, who will enable you to tackle the trouble where it should be tackled —and that is at the root source. Get better the natural way.

Rich Memory

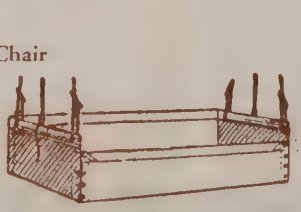
I have grown rich to-day.
In my heart's treasury
I slipped a coin
That time cannot take
Nor a thief purloin.
Oh, better than the minting
Of a gold-crowned king
Is the well-kept memory
Of a lovely thing.

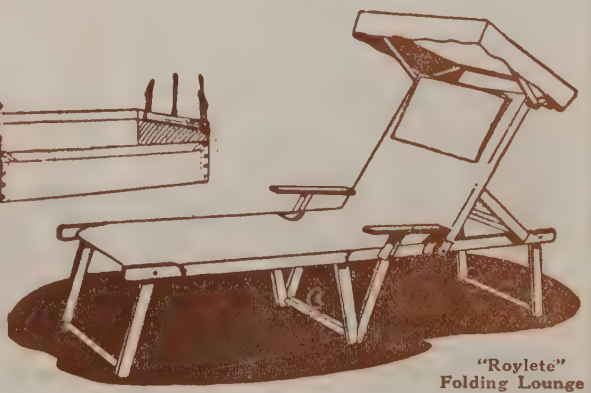
—Sent in by "Anita."

"Roylete" Garden Furniture—Colourful and Practical

Hazelmere Chair

"Roylete" Hanging Cot





"Roylete" Folding Lounge

WRITE TO DEPT. D.A. FOR FREE CATALOGUE

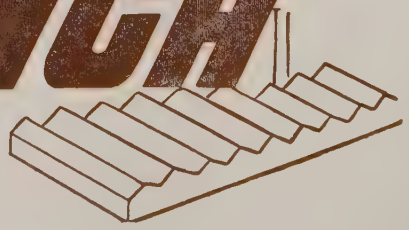
E. LE ROY, Ltd. Dept. "D.A.", P.O. Box 780, 81 QUEEN ST., AUCKLAND.

"I'm going home to Mother"

"My war work ends to-morrow, and Bob is due home any day now, so Mother and I are getting busy building a nest for us youngsters. And one of Mother's "musts" is Air-Cell or Onehunga Blankets. Since her mother's day Onehunga products have been top favourites in our home, and she won't let me start a home without Onehunga quality."

That day will come for us all, and when it does the Onehunga Mills, for so long weaving for war, will have available again full supplies of these famous woollens which have been the choice of New Zealand housewives for over three generations.

ONEHUNGA



ONEHUNGA BLANKETS —— AIR-CELL BLANKETS —— ONEHUNGA WOOLLENS & TRAVEL RUGS. Distributors: SARGOOD, SON & EWEN LTD.

"Twelve Beautiful Things"

I THINK I must have received a list of "Twelve Beautiful Things" from nearly every "Good Neighbour," judging by the number of entries piled on my desk. Most writers showed a keen appreciation not only of Nature's loveliness and the finest offerings of the Arts, but also of the beauty to be found in the simple everyday things of life.

First prize to "A. M. Dowell," Taranaki, and "Faraway," Gisborne. The second prize is shared by "Homespun," Halcombe, "E.W.," Waiheke Island, and "Laborare est orare," Blenheim. Highly commended:—"Bee," Timaru, and "Wheturangi," Auckland.

First Prize (Equal)

THE first most beautiful thing, I think, is **love**—love so beautiful that it makes all things possible, all things bearable, all things equal. **Loyalty** comes next, making faith its close companion and trust its friend. **Liberty** is dear, and its price is above rubies. Men fight for it and die for it. It has a clear, pure beauty, measured by the spirit of endurance and conviction. Lest I should become too serious, I toss in **laughter** here—the fat chuckles of the very young, the boisterous laughter of growing children, and the sober merriment of the old. It is the most beautiful sound, and the sweetest ingredient in life's compound.

There is **life** itself in all its beauty. The beauty of a babe . . . young kittens . . . lambs at play; new leaves in springtime and blossoms on the trees. Into life comes the dignity of **labour**, with the joy of work well done and the abiding satisfaction of service for others. The dignity of labour adds beauty to all one's tasks, and gives a spiritual significance which penetrates to the depth of one's being. **Leisure** follows closely on labour's heels, and with it comes the beauty of repose, and a time of recreation.

There is the beauty of **light**—luminous, brilliant, tender, all pervading; the stars by night and the sun by day; candlelight, moonlight, firelight and lamplight. Each possesses unutterable beauty, tinged with memory. We have beauty in **line**—the lovely bodies of the very young; the charming grace of youth; beauty in the supple movements of animals; beauty in the naked branches of a tree; beauty in the lines of a full-rigged ship. I think of old lace and of my lovely deep creamy wedding veil made by hand more than a century ago. Tinted by age to a rich ivory, intricately patterned, it seems impossible that human hands could fashion a thing of such delicate beauty.

Then there is my **lake**, the "Lake of Rippling Waters." Cradled in the hills, unspoiled, bush fringed, and exquisitely lovely, it is to me a place of tranquility and refuge where I may go in memory at all times. I have peace at my call, right in the midst of my busy life, and I know that when peace comes to the world again, my lake will still be shining.

Finally, but for the gift of **language**, I could not put my thoughts on paper and give them to you—language with its beauty of sound, its poetry and rhythm; words, and all they convey in tenderness, compassion, understanding and love. And we are back to the beginning again . . . "And the greatest of these . . . is **love.**"

—"Faraway," Gisborne.

First Prize (Equal)

THESE are, to me, the twelve most beautiful things:—

1. The Bible, with its matchless prose and imperishable truths.
2. The Bach-Gounod "Ave Maria."
3. A prayer breathed in perfect faith through the stillness and hush of a beautiful cathedral of old, hallowed stone.
4. Beethoven's "Moonlight Sonata," played by Horowitz.
5. Byron's "Childe Harold," especially the verses describing the Acropolis and the lines about high mountains.
6. English trees against a frosty winter sky.
7. Landscapes by Arthur Streeton, the Australian painter.
8. A happy and well-loved home.
9. The love of a friend.
10. The sea in the twilight when it is like a piece of old tapestry in faded blues and greens and silver.
11. Clematis festooning the green of the virgin bush in spring.
12. The smell of honeysuckle in a little country lane in the early morning.

—"A. M. Dowell," Taranaki.

Second Prize (Equal)

ONE cannot limit beauty; every person measures for himself. Beauty is intangible—it is "in the eye of the beholder," the ear of the listener, the touch of sensitive hands. There is the beauty of spirit, the flowering of minds. Beauty belongs to the serenity of mountains at dawn, to the tranquillity of an ocean at sunset, to the austere silence of ice—but in my corner of the earth I find these beauties:—**Stars:** In the crisp winter nights, after silent homage to our much-loved Southern Cross (with her ever-faithful pointers calling to mind others who stood by a Cross), I contemplate Scorpio flinging his lovely curves so arrogantly across the sky, his bold ruby heart Antares bared for all to see.

Frost: The pale chaste light of winter mornings brings an exalted moment when the long primrose fingers of the sun write strange hieroglyphics on the discs of ice in the fowl-yard drinking vessels.

Linen, the oldest textile used by man. Philo (circa 20 B.C.) wrote: "It is a symbol of firmness, incorruption, and of the clearest splendour. It is made of nothing mortal and more resembling light the more it is cleansed by washing." The blue-flowered flax holds this secret in her slender straw.

A newly-shorn fleece: The sheen of wool reflecting light is a beauty about which my loom could weave a psalm of thanksgiving.

A brood of ducklings as they swiftly "tread" the creek.

Reflections in the water, sometimes still as glass, sometimes tremulous with movement.

The "bloom" on fresh eggs, an opaque beauty which one glimpses when gathering these farmyard pearls from the nest.

The grain in wood, whether of polished floor or an odd plank, which causes one to marvel at the beautiful etching from a master hand.

A **field of onions** captures a blue light and impales it upon their spikey foliage. The opaque globes which hold the seed look like ranks of chubby barristers with close-curled wigs.

A **newly-ploughed field,** on which is written in long straight lines a script of toil by the skilful ploughman.

The confidence of animals and their intriguing ways of obtaining a caress or a coveted dainty.

The eyes of our young—God grant that this beauty is not spilled in barren sorrow by war.

—"Laborare est orare," Blenheim.

Second Prize (Equal)

IN making my selection I have chosen three from holidays, and the first is a primose-tinted sky. We were travelling across Belgium by train and the flat uneventful country was transfigured by a wonderful twilit sky of palest primrose. A painting, "The Yellow Turban," by Vermeer, which I saw in Holland fascinated me by its beauty. The eyes of the young girl it depicts are luminous and expressive and I returned again and again to it. A miniature lake set in the hills, the dark fir trees mirrored in the still waters, is a scene not easily forgotten either.

Black rocks, wild white horses, and the spray blown across my face I include from Nature. Turning to a more smiling mood, a cherry orchard stands out, the laced branches of blossom silhouetted against the deep blue sky. I include also a high-banked Devonshire lane crowded with tightly-curled ferns, primroses, and shyly-peeping violets.

Protection!
Here's the ideal disinfectant for household and farm use. Lathers freely with soap. Powerful and Economical. Manufactured under the supervision of a highly-qualified chemist.
SANRAY
DISINFECTANT
SANRAY
DISINFECTANT
FLUID
N.Z. Distributors: SIMMS JONES LTD., Christchurch.

Competitions

March

List the 15 books which you consider outstanding and send them in to me by March 15.

April

Do you remember the old folk tale of the Sleeping Beauty and how all the fairies of the kingdom came to present their gifts when the little princess was christened? "One gave her virtue, another beauty, another riches, and so on till she had all that was excellent in the world."

If you could have three wishes what would you choose for *your* child? Is there some particular career which you hope he will follow? Would you seek to bestow on him a talent for music or languages or painting, or are there other qualities you rate higher than ability? Entries close on April 15.

"WHAT I WISH MOST FOR MY CHILD."

There will be a prize of 10/- for the best essay and the second prize is 5/-.

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004, Wellington.

I could not improve on Shelley's lines to describe my next choice—

"That orbed maiden with white fire laden
Whom mortals call the moon."

Nature herself could not have produced a more beautiful effect than my eighth choice (man-made), a ballet, "Moonbeams," on an illuminated ice rink where the dancers moved gracefully and skilfully over the ice in frocks of moonlight blue.

Much of the prose of the Bible is as beautiful as poetry. These few lines from The Song of Solomon have always spelt beauty to me since I learnt them at school—"For, lo, the winter is past, the rain is over and gone. The flowers appear on the earth; the time of the singing of birds is come, and the voice of the turtle is heard in our land; the fig tree putteth forth green figs, and the vines with the tender grape give a good smell." I do not know of any more beautiful lines describing the loveliest season of the year.

My list would not be complete without some of the beautiful melodies of Schubert, particularly "Ave Maria."

Finally, shall I ever forget my baby's first smile, so elusive, so fleeting, yet the memory, as Keats writes of beauty, "is a joy for ever."

—"Homespun," Halcombe.

Second Prize (Equal)

I HAVE seen Beauty on a summer morning
On dew-drenched hills and in the pearly dawning.
I have seen Beauty on a summer's night
O'er tumbled waters in the pale starlight.
I have seen Beauty in the eyes of youth
Which hold a glimpse of God's eternal truth.
I have seen Beauty in a swaying flow'r,
I have felt Beauty in a golden hour.
I have found Beauty in my inmost heart
Where all most lovely finds a counterpart.
I have heard Beauty in bird-song at dawn,
In wind sighing through a field of ripening corn.
I have touched Beauty in a cat's soft fur
And heard it in her friendly purr.
Most—I've found Beauty in the thought of God
By whom all other Beauty is out-poured.

—"E.W.," Waiheke Island.

Highly Commended

"THERE'S the wind on the heath, brother, sun, moon, and stars, brother, all sweet things," wrote George Borrow. And Rupert Brooke, "These I have loved. . . . .

Wet roofs beneath the lamp light,
the strong crust
Of friendly bread, and many-tasting food;
Rainbows; and the blue bitter smoke of wood
And radiant raindrops couching in cool flowers,
And flowers themselves that sway through sunny hours . . ."

And the Psalmist sang of four things wonderful beyond his understanding the way of an eagle in the air, the way of a serpent upon a rock, the way of a ship in the midst of the sea, and the way of a man with a maid. But the twelve most beautiful things in my life lie not in the storied heavens nor in the wonders of lands far away; they are not in the vague imaginings of mystics nor won by any wealth or greatness. They are simple things that can be found in everyday life . . . the sweet smile of recognition in a baby's face . . . the scent of geraniums on a summer evening when that precious still short pause comes at the end of the day's work . . . sunlight on the blue and white check cloth of the breakfast table . . . a bowl of tawny-headed chrysanthemums . . . the earnest gravity of a small son as he tries to help at a household task . . . warm flames leaping up the chimney as a cosy fire catches on a frosty night . . . silver gleaming reflectively after cleaning . . . the fragrance of lavender in linen . . . the satisfaction that arises from seeing shelves of bottled fruit and neatly labelled jams and jellies . . . the warm strength of a man's comforting arm around your waist . . . the spiced smell of a neatly cut rich fruit cake . . . the clear delighted freshness of a child's spontaneous laughter. . . Twelve?—No, there are a thousand beautiful things that only a woman knows.

—"Wheturangi," Auckland.

THE "Nutcracker Suite," by Tschaikowsky; the verses, "My Kingdom," by Robt. Louis Stevenson; breakers amid sunshine on an ocean beach; a waterfall in the silence of the bush; church bells on the sabbath morning; a little child at prayers; fairy tales of children; "The Madonna Del Granduca" (a painting by Raphael); Portia's speech from "The Merchant of Venice"—

"The quality of mercy is not strain'd.
It droppeth as the gentle rain from heaven
Upon the place beneath: it is thrice blest;
It blesseth him that gives and him that takes."

—"Leila," Hamilton.

"WHAT are the twelve most beautiful things?"
The Editress gaily asks.
"Write them for me in order of merit
And earn a prize for your tasks."
Beauty by the dozen! It can't be so,
For Beauty extends to the Arctic snow
or the sun's creative kiss.
"Truth is Beauty!" the poet sighed.
"But what is Truth?" grieved Pilate cried.

What are the twelve most lovely things?
Our questing minds demand.
Pass them in order, two by two,
And marshall them to command.
Twelve! I'd as soon start counting the starry sky
As try to choose mid loveliness.
"A thing of beauty is a joy forever"—
There's Beauty all round while we're both together.

What are the twelve most perfect things?
No soul imperfect knows.
My fettered mind has struggled in choice
But only more frustrate grows.
Perfect the Ultimate Law. And perfect
The drop of dew. I leave the choice to you.
"Beauty is Love!" the lover cries.
"And Love is God!" the saint replies.

—"La Belle Dame sans Merci," Feilding.

STOCKS OF SOAPSAVE NOW AT GROCERS

All essential ingredients, including caustic. All you need is the fat. Save soap costs by using SOAPSAVE. Sold by all the leading grocers.

Manufactured in Dunedin by A. Murdoch and Co. (Dn.) Ltd.

GIFT PARCELS of N.Z. FOODSTUFFS for OVERSEAS

Use our Special Organisation to send parcels of foodstuffs to your friends and relatives overseas. Parcels contain Canned Meats, Cheese, Honey, Jam, Dried Milk, Beef Essences, etc. Send coupon for details.

Tobacco and Cigarettes—

Our Principals in Great Britain will arrange to post direct to members of the N.Z. Forces overseas, and P.O.W., Gift Parcels of the famous Dobie's FOUR SQUARE Tobacco & Cigarettes. Post the coupon for particulars.

JOHNSTONE & BRINSDEN
(Successors to A. C. Norden)
Nathan's Bond Building,
45-47 Customs St. East, AUCKLAND, C.1.

Messrs. Johnstone & Brinsden Ltd.,
P.O. Box 183, AUCKLAND, C.1.

Please send particulars of GIFT PARCELS of

Check "X" ☐ Foodstuffs ☐ Tobacco & Cigarettes

NAME .....

ADDRESS .....

.....J.A.15/1/45

OVEN DRYING—*How to Save Garden And Orchard Surplus*

IF you have a gas or electric range, the oven offers a simple and satisfactory way to dry fruits and vegetables for winter meals. Most foods successfully dried in the sun or in a home drier can be dried in an oven. The drying table in this article gives directions for many fruits and vegetables—from apples to turnips. Home drying doesn't suit lettuce, melons, cucumbers, or radishes. Asparagus can be dried, but is not as good as most dried vegetables.

IT must be understood that oven drying is small-scale drying. An oven can take 4 to 8lb.—preferably 6—of a prepared fruit or vegetable at one drying load. It takes most of a day for the load to dry.

Oven drying is a watchman's job. Never go off and leave food drying in an oven. Gas pressure may change. If trays should catch fire, turn off the heat and close the oven door.

If You Buy Trays

You can buy trays or make them. Be very sure ready-made trays are right size for your oven. If bought trays have wire surface, cover with cotton netting so food won't stick, and so shredded or tiny pieces won't slip through. Metal trays cannot be used in sulphuring.

Tray Making

Materials: Soft timber, nails or corrugated fasteners, coarse curtain netting, string, carpet tacks, or thumbtacks.

Method: Measure the oven's inside length and width. Make each tray frame with outside dimensions 1½in. smaller than the oven's inside length and width. This amount of space is needed for air to circulate.

Tack strings diagonally between corners of each frame. Stretch the strings tight and twist where they cross. Stretch a single layer of netting on top of the strings, tightly across the frame, turn in a hem, and tack down on the underside of the frame.

Care of Trays: These trays can be cleaned without taking apart. Just wash the netting with a brush and warm soapy water. Rinse, then dry trays in oven or sun.

Blocks for Tray Stacking: Cut blocks 1¼ by 1¼ by 3in. Cut as many as you need. See section on loading and stacking.

Thermometer Needed

Without a thermometer it is almost impossible to control temperature in oven drying.

Any thermometer will do, provided it registers below 150° and up to 250° F. or higher.

Utensils

To precook vegetables and fruits use a preserving pan or any good-sized cooking vessel.

Steam the food if you can. A steamer can be made: Use a pan with tight-fitting lid and a colander, strainer, deep-fat frying basket, or cheesecloth basket resting on a rack of wire or wood. An easy-to-make rack with spool legs is illustrated.

To make a cheesecloth basket: Cut a cheesecloth circle about 10in. larger in diameter than your pan. Run through a small hem a wire not likely to rust. Make the wire rim the right size to go into the pan easily. Use wire or cord for handles. Then you can lift the handles with a fork.

Paring Knife

Pare with as sharp a knife as you have with a blade of stainless steel, glass, plastic, or silver—so foods won't be discoloured.

Sulphur Method Outdoors

If you can sulphur light-coloured fruit outdoors, get a box big enough to be turned upside down over trays and a dish beside them. Cut a flap near bottom of box for air to enter. This flap is closed after the sulphur has burned.

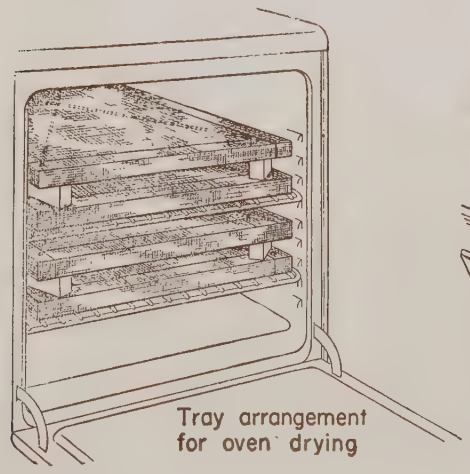
The sulphur—1 level teaspoon per pound of prepared fruit—is wrapped in paper and put in a discarded dish or pan beside trays. The paper is lighted and the box set snug against ground over trays and dish to prevent loss of sulphur fumes.

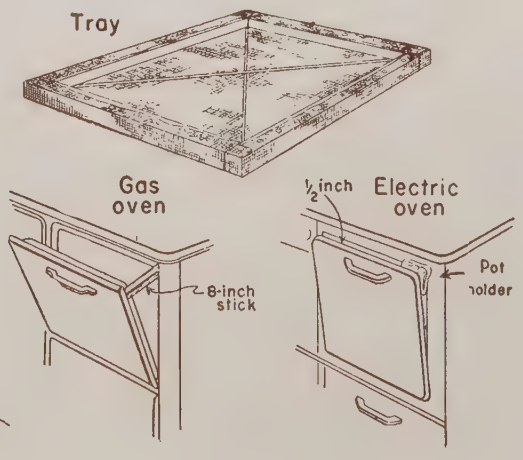
DRYING FOOD IN ELECTRIC OR GAS OVEN.

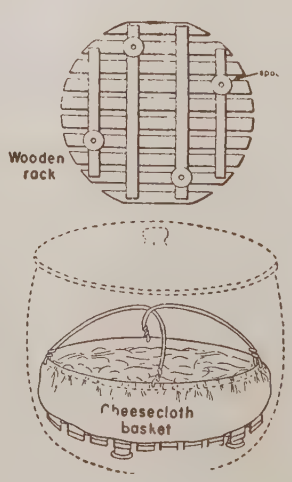
Choose for drying fruit and vegetables that are fresh, ripe, and sound—just right for table use. Decay on one slice of apple or mould on one bean may give bad flavour to a trayful.

Bring in from the garden or buy for drying only what you can dry at one time. Dry vegetables promptly to hold flavour and food value.

Wash food well. Get off every trace of dirt, spray, or any insecticide.







Pretreatment for Fruit

Apples and other light-coloured fruits tend to darken in drying and storage.

Best-known way to hold their colour —and flavour and vitamins A and C —is to sulphur them.

Outdoors, use the sulphur box described. Or working indoors, soak fruit 15 minutes in a solution of 3½ tablespoons potassium metabisulphite or sodium sulphite to 1 gallon water. Don't be concerned if sulphured food has a strong odour or taste when dried. The taste disappears during cooking.

Two less effective ways to treat light-coloured fruit are: (1) Dip in a salt-water bath of 4 to 6 tablespoons salt to 1 gallon water for about 10 minutes. (2) Precook fruits, except apples, in steam or boiling water until tender but firm.

Pretreatment for Vegetables

See drying table for special treatment for certain foods.

For precooking vegetables best choice is to steam over a little boiling water. If you can't steam for lack of a pan with a lid, cook in enough boiling water to cover. See drying table for steaming time. Boiling takes less time than steaming, but cook until tender but firm is the general rule.

Oven Ready on Time

When food is ready have the oven ready, too. Set one oven rack about 3in. from the oven floor and the other rack, if there are two, just far enough above for two trays to be stacked between.

Don't turn on the top unit in an electric oven. If necessary, remove it.

Turn on the current or light the gas burner 15 minutes before drying time. If there's a regulator, set it at 150°, 200°, or 250° F., whichever is lowest setting on your oven. If a gas stove has no regulator, turn the flame very low. Be careful throughout drying lest the flame go out unnoticed.

If it's an electric oven, keep the door closed while it warms. If it's a gas oven, prop the door open at the top corner with an 8in. stick.

Loading and Stacking

Spread food evenly, 1 to 2lb. to each tray. The lighter load dries faster. If a gas-oven floor has corners cut out, don't spread food on tray corners—it will scorch.

If you dry different foods at one time, don't include onions, celery, kale, or other foods with strong flavour or odour.

Stack two loaded trays together, using a wood block at each corner, so air can circulate between trays. Place one stack on each oven rack; or, if there is only one rack, use extra blocks and stack three or four trays together.

Number trays "1" to "4" and mark front and back to help keep track of tray positions.

Not Too Hot

Put the thermometer on the top tray. Temperature should stay about 150° F. Prop an electric oven door open by tucking a folded pot holder in top corner to make about a half-inch crack. Prop a gas oven door open 8in. at top. The right opening helps control heat and lets out moist air.

If you can't keep oven heat down to 150° F., prop the door a little wider; or, in a gas range, reduce flame by turning oven-valve handle toward "off" position. As you turn it, watch lest the flame go out.

Be a Clock Watcher

Temperature and air flow are not the same everywhere in an oven. Trays nearest oven ceiling and floor dry fastest. So—

About every half hour take each stack out. If food is more than one layer deep on a tray, stir or turn pieces so they can dry evenly. Returning stacks to oven, change places of top and bottom stack and turn back to front.

DRYING TABLE FOR FRUIT AND VEGETABLES.

1. Spread in single layers on trays unless otherwise noted. 2. Usual drying temperature is 150° F. Onions or cabbage require temperature not above 135°. Open oven door wider if temperature cannot be otherwise controlled.

FOOD	PREPARATION FOR DRYING	DRYNESS TEST
Fruit		
Apples	Pare, core, and cut in one-fourth inch slices or rings. Sulphur outdoors 30 minutes, or dip in solution. Spread not more than one-half inch deep on trays—overlap rings.	Pliable, springy feel, creamy white.
Apricots	Same as peaches	Pliable and leathery.
Berries	No pretreatment. Leave whole, except cut strawberries in half.	No visible moisture when crushed.
Cherries	Remove stems and stones. If juicy, drain about 1 hour.	Leathery but sticky.
Grapes	Leave whole, remove stems. Dip in boiling water to crack skins.	Pliable, dark brown
Nectarines	Same as peaches	Pliable and leathery.
Peaches	Peel if desired. Cut in halves, remove stones. Sulphur outdoors, peeled 30 minutes, unpeeled 2 to 3 hours; or dip in solution; or precook. Dry stone side up.	Pliable and leathery.
Pears	Pare and remove core and woody tissue. Cut into one-fourth inch slices or rings, or into quarters or eighths. Sulphur outdoors 2 to 4 hours, according to size of pieces; or dip in solution; or precook.	Leathery, springy feel.
Plums	Same as prunes. Use freestone kinds. Sulphuring 20 to 25 minutes helps them to keep better.	Pliable and leathery.
Prunes	Cut in halves and remove stones or leave whole. Halves: No pretreatment. Whole: To soften and crack skins and to help fruit dry better, hold in steam or boiling water for 2 minutes, or dip in a boiling lye bath (3 tablespoons lye to 1 gallon water) for one-half minute.	Pliable and leathery.
Vegetables		
Asparagus	Use 3-inch tips only, split lengthwise after cooking. Steam 10 minutes, or until tender but firm.	Very brittle, greenish black.
Beans, green lima	Shell. Steam 15 to 20 minutes, or until tender but firm.	Shatter when hit with a hammer.
Beans, runner and French	Trim and slice lengthwise or cut in 1-inch pieces. Steam about 20 minutes, or until tender but firm. Spread about one-half inch deep on trays.	Brittle, dark green to brownish.
Beet	Trim off all but 1 inch of tops and roots. Steam whole about 30 to 60 minutes depending on size, or until cooked through. Cool and peel. Cut in one-fourth inch cubes, or slice one-eighth inch thick. Spread not more than one-fourth inch deep on trays.	Brittle, dark red.
Broccoli	Trim, slice lengthwise in one-half inch strips. Steam 10 minutes or until tender but firm.	Brittle, very dark green.
Brussels sprouts	Cut lengthwise, one-half inch thick. Steam until tender, 12 minutes.	Crisp.
Cabbage	Trim, cut in strips, one-fourth inch thick. Steam 5 to 10 minutes, or until tender but firm. Spread evenly to a depth of not more than 1 inch. (See note 2 at head of table).	Crisp, pale yellow to green.
Carrots	Steam whole about 20 minutes, or until tender but firm. Scrape or peel. Slice crosswise one-eighth inch thick, or dice in one-fourth inch cubes. Or shred before steaming. Spread not more than one-half inch deep on trays.	Very brittle, deep orange.
Cauliflower	Separate into flowerlets, cut large ones in half. Dip in salt solution (6 tablespoons salt per gallon of water). Steam 10 minutes, or until tender but firm.	Hard to crisp, tannish yellow.
Celery	Strip off leaves, cut stalks into one-half inch pieces. Steam 10 minutes or until tender. Stir occasionally during drying.	Very brittle.
Corn	Husk, trim. Steam on cob until the milk is set, about 15 minutes. Cut from the cob. Spread one-half inch deep.	Shatters when hit with a hammer.
Greens	Trim off tough stems. Steam 5 to 20 minutes or until tender. Spread leaves that mat, such as spinach, about one-fourth inch deep; others, not more than 1 inch.	Crisp, very dark green.
Mushrooms	Peel the larger mushrooms. Dry whole or sliced, depending on size. No precooking necessary. If stems are tender, slice for drying; if tough, discard. Spread not more than one-half inch deep on trays.	Leathery to brittle.
Onions	Peel, slice into one-eighth inch rings. Steam 5 to 10 minutes. If dried for seasoning, do not steam. (See note 2 at head of table).	Very crisp.
Parsnips	Same as carrots	Very brittle.
Peas, green	Steam shelled peas 15 minutes, until tender but firm. Stir frequently during the first few hours of drying.	Shatter when hit with a hammer.
Pumpkin	Quarter, remove seeds and pith, cut in 1-inch strips, and peel. Slice strips crosswise one-fourth inch thick. Steam 8 to 13 minutes, until slightly soft but not sticky.	Leathery.
Rhubarb	Cut in 1-inch lengths. Dip in actively boiling water 3 minutes.	Very brittle, dark green and red.
Squash, Hubbard	Same as pumpkin	Leathery.
Tomatoes (fleshy varieties only)	Dip in boiling water for 1 minute. Peel, remove stem end, slice one-eighth inch thick.	Leathery, dull red.
Turnips	Quarter, peel, cut in one-eighth inch slices. Steam 15 minutes, or until tender but firm.	Leathery.

Every hour or two reverse trays in each stack, making upper tray serve as lower.

If oven has only one rack, treat four trays as two stacks when you shift and turn. If there are three trays, shift bottom tray to top, top to middle, middle to bottom.

Most vegetables take 4 to 12 hours to dry; fruit takes 6 hours or longer.

When Food is Done

Fruit should be dried to a moisture content of 10 to 15 per cent.; vegetables 5 to 10 per cent.

When food seems done take a sample out; cool it. Test according to the drying table.

Food that overheats near the end of drying will scorch easily. If pieces around tray edges dry first, take them right out.

When rest of the food meets dry-enough test turn off heat.

Package Your Product

Cool the food, then package at once. Foods that seem "bone dry" may be spoiled by dampness in storage. Insect saboteurs can enter tiny cracks in a seal or seaming.

Fill containers as tightly as possible without crushing the food. This forces air out. Then seal tightly to keep air out.

Glass jars, the sort used in home canning, are especially good for dried foods. If old jar rings are used, use two for a tight seal. Or pack food in old coffee cans or other tins with a tight lid. You can use Scotch tape or adhesive tape, or cloth dipped in paraffin around a lid to help make a seal.

Another possibility: Use heavily waxed paper cartons with tight-fitting lids or get bags especially made for storing dried foods. These are moisture and vapour proof and can be sealed with a warm iron. Paper is not so safe from insects and mice, so store small packages in a crock, lard can, or tin with good lid.

Properly dried and stored, most vegetables keep well about 6 months. Tomatoes and mushrooms are exceptions; use within about 3 months. Fruits well dried keep a year or longer.

It pays to package vegetables in fairly small quantities. You can use small packets handily. Roughly, 1 to 2 cups of dried food serve 6—leafy vegetables take 4 to 6 cups . . . you can pack accordingly. Also dried food is best soon after opening. And you don't expose the lot to air and possible dampness when you take out a little.

Keep Dry, Cool, Dark

Store in a dry, cool place, to hold food value and flavour.

Dark storage helps dried food keep its colour and flavour. If necessary, make a blackout for glass jars.

Examine dried food in storage occasionally. If you find signs of moisture, heat the food again to 150° F. for 15 minutes and repackage.

For Good Eating

1. Soak dried foods in just enough cold water to cover, and just until food is plump. Few foods need more than 2 hours, some less. Dried greens, finely cut vegetables, and thinly sliced fruit don't require soaking at all.

2. Use same water for cooking as for soaking.

3. Boil gently in covered pan, just until tender. Cooking time varies with the food and may be 10 to 30 minutes.

4. Sweeten fruits. Season vegetables with fat, meat, garlic, onion, or use in soups, stews, or baked dishes. You can add salt to vegetables any time—during soaking, while cooking, or before serving.

Oven-drying Arithmetic

The table below gives some idea of the yield of dried food that can be obtained from a peck of a fruit or vegetable, as bought or picked. Weights per peck given below are approximate.

Apples	12lb. yield 1¼lb. (3pt.)
Beans, lima	7lb. yield 1¼lb. (2pt.)
Beans	6lb. yield ½lb. (2½pt., 1in. pieces).
Beet	15lb. yield 1½lb. (3-5pt.)
Broccoli	12lb. yield 1¼-1½lb. (12-15pt.)
Carrots	15lb. yield 1¼lb. (2-4pt.)
Celery	12lb. yield ¾lb. (3½-4pt.)
Corn	18lb. yield 2½lb. (4-4½pt.)
Greens	3lb. yield ¼lb. (5½pt.)
Onions	12lb. yield 1½lb. (11½pt., sliced; 4½pt. shredded).
Peaches	12lb. yield 1-1½lb. (2-3pt).
Pears	14lb. yield 1½lb. (3pt., quarters).
Peas	8lb. yield ¾lb. (1pt.)
Pumpkin	11lb. yield ¾lb. (3½pt.)
Squash	10lb. yield ¾lb. (5pt.)
Tomatoes	14lb. yield ½lb. (2½-3pt.)

[Reprinted from a bulletin issued by the U.S. Department of Agriculture.]

Though we travel over the world to find the beautiful, we must carry it with us or we find it not.

IF IT'S H.B. IT'S GOOD.
Hallensteins
FOR MENS & BOYS WEAR
HALLENSTEIN BROS LTD
HB
NEW ZEALAND
29 H.B. MEN'S STORES—
Whangarei to Invercargill.

CLOTHES DRIER
Collapsible . . simply constructed of wood and stout cord — 24 spring pegs. 20 feet of drying

space. Hangs from ceiling. 22/6. Post 8d.
SKEATES & WHITE LTD.
48 Fort Street —— Auckland. C.1

HEARING is happiness

FOR YOU!
Think what it would mean—to you and those you live with—if you were able to hear again, without strain, shouting, lip-reading: A new life and happiness—in business, social, public or home life. Clarion, the world's latest scientific Hearing Aid, is effective in most cases; inconspicuous; has already given new hearing to thousands.
INCONSPICUOUS
FREE HOME TRIAL
Clarion HEARING AIDS
Don't delay. You may be wasting precious hours and days of "hearing" happiness. Send coupon now for literature on guaranteed, individually designed Clarion Aids.
Mr. E. Dalton, HEARING AID SUPPLY CO.
Box 1149 Queen's Arcade, Auckland. (Phone 40-327)
Send me details of your Clarion Aids.
NAME .....
ADDRESS .....
J.A. 1/45

Mary's at - Home -

WHEN I cannot appreciate my "Pollyanna compensations" I open my holiday diary, wherein I relive long, wonderful days. How really exciting have been some of my small experiences and how strange and lovely some of the sights I have enjoyed. Sometimes, when in need of mental stimulation, I indulge in an observation walk. This requires careful noting of details connected with fences and chimneys, or letter-boxes. gardens and pedestrians. However, I always return to my bookshelves and discover with delight that my old loves still attract. I arrange them anew to my satisfaction and linger in their company, feeling again a deep sense of friendship and contentment. —**"Bry."**

WHAT about that lonely soldier's wife who is one of your neighbours? Why not pop in and offer to mind the baby for her while she has a night at the pictures or visits some friends? Remember what her husband is doing to keep us in security and peace in this beautiful land of ours. She will enjoy the unexpected break in the monotony of her life and she will appreciate your thought for her in her loneliness.—**"Rosemary," Southland.**

A YOUNG Maori woman lives about half a mile from here. Her old mother is paralysed, her father is a semi-invalid, and her three small children have whooping cough. I set to work and make a big tin of biscuits to cheer her up and then I turn out my clothes chest to see if there is anything suitable to cut down and re-make for young Mere. Yes, an old skirt can be made into a little dress. With bright buttons and a few embroidered wool flowers it will be a garment which will make "little brown-eyes" jump for joy.—**"Darky Top."**

WHEN I find I am becoming "fed-up" with this world I allow myself to be transported to another per the medium of a book. One comes back with a grand feeling of well-being, and, incidentally, of thankfulness to the author for letting you accompany him on the journey. Pettiness just does not exist after you have spent an hour or so sharing the triumphs and hardships of some great soul who tried to accomplish something noble in the face of great odds; or even when you have been merely chuckling with Hackforth-Jones over the lighter side of submarine life. Recently I have been dipping into Arthur Mee's "Children's Treasure House." Volume one deals with Heroes of the World and I have read this with the greatest interest, meeting again the characters in history I learned at school, but with what a difference! Here, the men and women seem alive—it's like suddenly realising that one has been living with people all one's life and only now begun really to know and appreciate them.—**"Pioneer."**

MAY I join your happy circle of friends? We have a small dairy farm of pedigree Jerseys, an apple orchard, and pedigree pigs, too, and as we have no permanent man I now milk cows, feed calves, and do orchard work as well. Before becoming a Land Girl I had been a domestic help, a candid photographer, and lastly a nurse. But even milking cows in rainy weather is better than hospital routine to a country girl, so I came home again.

I wonder if you will like these lines:

"On one man's soul it hath broken,
A light that doth not depart,
And his look, or a word he has spoken,
Wrought flame in another man's heart."

I feel that some of the lovely things you print do this for many of us.—**"Helen."**

Table of Contents — February, 1945

	Page
Farm Production Plan for 1945—Hon. B. Roberts	113
Pig Management: Care of Sow Between Weaning and Farrowing—H. M. Peirson	115
Radio Broadcasts	116, 174
Air Sowing: Application and Limitations—A. M. Prichard	117
Studies in Farm Management: A Wairarapa Pastoral Farm—N. Lamont	121
Home-made Hive Equipment—C. R. Paterson	131
Killing, Dressing, and Curing Livestock on the Farm—W. T. Brown	135
Meat Inspection for Farmers—P. Haugh	147
Farming in New Zealand: Pasture Management—S. H. Saxby	149
Liver-fluke of Sheep and Cattle—L. K. Whitten	167
Farming a Small Holding in Waitemata County—P. S. Syme	173
Weed Control by Kerosene and Sulphuric Acid	175
Seed Certification: Activities in Ashburton County—G. K. McPherson	179
Members of N.Z. Wool Board	185
Crop Subsidy Scheme: £5 an Acre for Winter Pig Feed	187
Veterinary Notes—Livestock Division	189
Seasonal Notes—Fields Division	193
Slaughterings of Stock	196
The Orchard and Vineyard—Horticulture Division	197
Guide for the Home Garden—Horticulture Division	199
Apiary Notes—Horticulture Division	201
Poultry-keeping Section—Livestock Division	203
Young Farmers' Clubs—S. Freeman, Editor	205
"The Good Neighbour," by Mary	209

SUBSCRIPTION RATES.

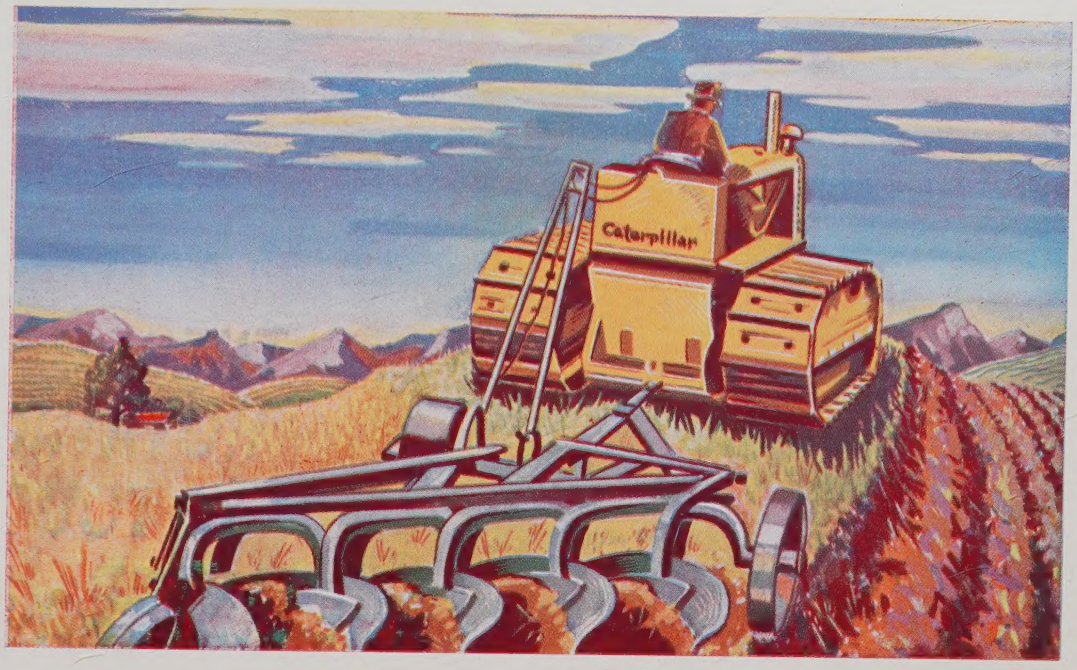
The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

COPYRIGHT PROVISIONS.

The articles in the *Journal* of the Department of Agriculture of New Zealand are copyright. Proprietors of newspapers and periodicals wishing to republish any matter are at liberty to do do, *provided both the Journal and author are acknowledged.*

The Minister of Agriculture does not accept responsibility for any of the private and trade advertisements included in this publication.

Printed by Blundell Bros. Ltd. (The Evening Post), Wellington—15780.



PRIMARY PRODUCTION COSTS ARE LOWERED by...

"CATERPILLAR" DIESEL TRACTORS

. . . . and that will be all important in every form of Farming during the years which follow the Peace.

When it comes to real operating economy coupled with the widest scope of all in actual working, then there is no substitute for——

"CATERPILLAR"

DIESEL REG. TRADE-MARK. **TRACTORS**

GOUGH, GOUGH & HAMER, LTD.

HEAD OFFICE AND SHOWROOMS - - - 145 CASHEL STREET, CHRISTCHURCH.

Branches at:—Auckland, Wellington, Dunedin, Palmerston North, Rotorua, Hamilton, Taumarunui, Masterton, Hastings, Timaru, Oamaru, and Invercargill.

THERE'S NOTHING TO TOUCH THE LISTER BOWL

STAYBRITE

STAINLESS STEEL

is the feature that appeals to every farmer.

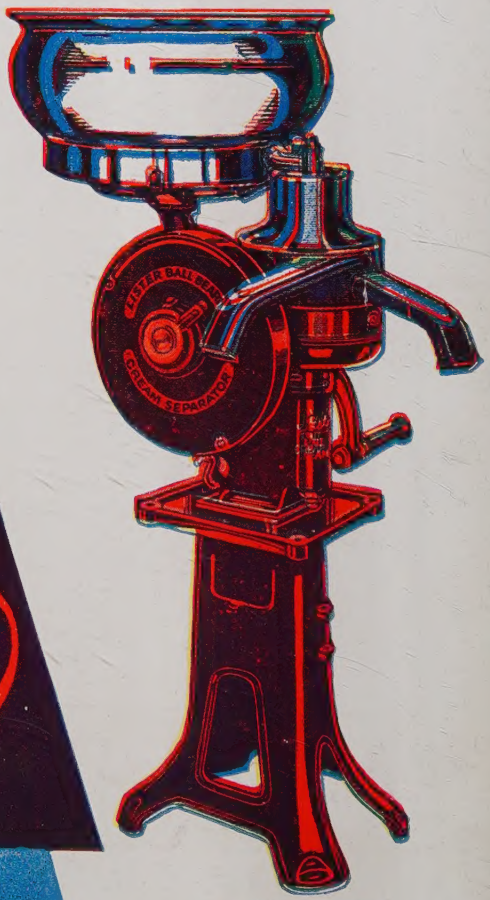
Because:

STAYBRITE STAINLESS STEEL is everlasting, needs no maintenance, and assures a lifetime of excellent service.

STAYBRITE STAINLESS STEEL cannot rust or corrode, and cleans as easily as glass.

Finally,

STAYBRITE STAINLESS STEEL is an exclusive **LISTER** feature, produced by the same engineers who build the world-famous **LISTER** engines and shearing machines.



LISTER
SEPARATOR
CO. (N.Z.) Ltd.

HEAD OFFICE:
BOX 63, AUCKLAND.

Branches at:
WHANGAREI,
HAMILTON,
PALMERSTON NORTH,
CHRISTCHURCH.

Lister

100% BRITISH